A Mathematical Simulation Model of a CH-47B Helicopter

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SUMMARY

A nonlinear simulation model of the CH-47B helicopter, developed by the Boeing Vertol Company (ref. 1), has been adapted for use in the NASA Ames Research Center (ARC) simulation facility. The model represents the specific configuration of the ARC variable stability CH-47B helicopter (fig. 1) and will be used in ground simulation research and to expedite and verify flight experiment design.

Modeling of the helicopter uses a total force approach in six rigid body degrees of freedom. Rotor dynamics are simulated using the Wheatley-Bailey equations, including steady-state flapping dynamics. Also included in the model is the option for simulation of external suspension, slung-load equations of motion.

Validation of the model (discussed in volume II of this report) has been accomplished using static and dynamic data from the original Boeing Vertol mathematical model and flight test data from references 2 and 3, as reproduced in reference 4. The model is appropriate for use in real-time piloted simulation and is implemented on the ARC Sigma IX computer where it may be operated with a digital cycle time of 0.03 sec.

NOMENCLATURE

ARC Ames Research Center

BV Boeing Vertol Company

c.g. center of gravity

rpm revolutions per minute

SAS stability augmentation system

INTRODUCTION

Volume II of this report contains static trim data, stability and control derivatives, and dynamic response data for the CH-47B mathematical model described in volume I. Validation of the helicopter itself (without the slung load) was highly successful for all flight conditions examined. Slung load validation was also successful with one exception. The Ames Research Center (ARC) model dynamic response of the slung-load lateral-differential cable angle, ν_L , was unlike the response of the Boeing Vertol Company (BV) model in terms of initial amplitude and damping ratio. Although it was possible to artificially modify the damping of this mode to obtain a good match at most flight conditions (as discussed in the volume I slung-load subroutine description), there is currently a mismatch in initial amplitude, presumably a result of computational differences between the ARC and BV simulation facilities.

Tables 1 through 7 provide a table of contents for the extensive validation data given in tables 8 through 45 and in figures 1 through 110.

Specifically, tables 1 and 2 give the flight conditions corresponding to the helicopter (no slung load) static trim and stability derivative data, respectively. Only ARC model static trim (tables 8-33) and stability derivative (tables 34-41) data are included in this report. During model validation, each number was compared with corresponding BV data and was found to be satisfactory.

The static trim data given in this report were produced with the CH-47B trim-sheet subroutine by selecting flag ICPRNT. Table 3 gives the static trim-sheet key in terms of math model mnemonics.

Table 4 gives the flight conditions corresponding to the dynamic response data given in figures 1-80. For each flight condition, the model was excited with a 1.0 sec pulse in each of the four control axes. Referring to the table, each response consists of four figures, illustrating kinematic, engine, and stability-augmentation-system (SAS) details of the model. Each figure provides a comparison between BV and ARC model responses, SAS on, and SAS off ARC model response.

Next, in figures 81-86, BV simulation model responses are compared with CH-47B and CH-47C flight test data from references 2 and 3, respectively. (The data extracted from ref. 3 are from a CH-47C helicopter with a CH-47B SAS, making the dynamic response data comparable with that of a CH-47B.) These comparisons were originally made in reference 4, and are reproduced for this report. Flight condition details for each of these comparison figures may be found in table 5.

Tables 6 and 7 give the flight conditions for static trim (tables 42-45) and dynamic response data (figs. 87-110) for the helicopter with the slung load attached.

REFERENCES

- Cogan, C.; Gajkowski, B. J.; and Garnett, Jr., T. S.: Full Flight Envelope Math Model for 347/HLH Control System Analysis — Control Document. Boeing Company, Vertol Division, report D301-10148-1, 1972.
- Yamakawa, G.; and Miller, L. G.: Airworthiness and Qualification Test, Phase D, CH-47B. USAASTA #66-23, 1970.
- 3. Albion, N.; Leet, J. R.; and Mollenkof, A.: Ground Based Flight Simulation of CH-47C Helicopter. Boeing Company, Vertol Division, report D8-2418-1, 1969.
- 4. Hackett, W. E.; Garnett, T. S.; and Borek, B. V.: Mathematical Model of the CH-47B Helicopter Capable of Real Time Simulation of the Full Flight Envelope. NASA CR-166458, 1983.

TABLE 1.- ARC MODEL STATIC TRIM DATA: FLIGHT CONDITIONS

Table number	Gross weight, 1b	Moments and products of inertia, slug-ft ²	ΔX _{c.g.} (DXCG), in.	SAS config- uration	Equivalent airspeed, knot	Flight condition
8	33,000	Nominal: $I_{xx} = 34,000$ $I_{yy} = 202,500$ $I_{zz} = 191,000$ $I_{xz} = 14,900$ $I_{xy} = I_{yz} = 0$	0.	OFF	0.1 (Hover)	Straight and level
9		Nominal		ON	.1 (Hover)	
10				OFF	20	
11				ON	20	
12				OFF	40	
13				ON	40	
14				OFF	60	
15				ON	60	
16				OFF	80	
17				ON	80	
18				OFF	100	
19				ON	100	
20				OFF	120	
21				ON	120	
22				OFF	130	
23				ON	130	
24			21.	ON	.1	
25			21.		80	↓
26			0.		80	Wings level, 1000 ft/min rate of climb
27					80	Wings level, 1000 ft/min rate of descent
28					75	Level flight, $\beta = +15^{\circ}$
29	1	↓	•	•	75	Level flight, $\beta = -15^{\circ}$

TABLE 1.- CONCLUDED

Table number	Gross weight, 1b	Moments and products of inertia, slug-ft ²	$^{\Delta X_{C.g.}}$ (DXCG),	SAS config- uration	Equivalent airspeed, knot	Flight condition
30	33,000	Nominal	0.	ON	75	Coordinated level turn, $\phi = +30^{\circ}$
31					75	Coordinated level turn, ϕ = -30°
32	22,000	$I_{xx} = 18,000$ $I_{yy} = 168,000$ $I_{zz} = 160,000$ $I_{xz} = 11,600$ $I_{yz} = I_{xy} = 0$.1	Straight and level
33	22,000	I _{XX} = 18,000 I _{yy} = 168,000 I _{zz} = 160,000 I _{xz} = 11,600 I _{yz} = I _{xy} = 0	•		80	Straight and level

TABLE 2.- ARC MODEL STABILITY-AND CONTROL-DERIVATIVE DATA: FLIGHT CONDITIONS.

Straight and level Gross weight = 33,000 lbI_{xx} = 34,000 slug-ft² I_{yy} = 202,500 slug-ft² I_{zz} = 191,000 slug-ft² I_{xz} = 14,900 slug-ft² $I_{xy} = I_{yz} = 0$ $\Delta X_{c.g.} = 0$ Perturbation step size: δ_B , δ_A , δ_R , δ_C : -0.5 in. p, q, r: -.2 rad/sec u, v, w: -10 ft/sec Table Equivalent airspeed, number knots 0.1 34 35 20. 36 40. 37 60. 38 80. 39 100. 40 120.

130.

41

TABLE 3.- CH-47B SIMULATION MODEL TRIM SHEET KEY

VTOT VTOTAL	U UB		V VB	1	W W	В		
G.W. WAIT	RPM OMEC	SA .	H ALT	TEMP TAMB	DXC DX		DZCG DZCG	
THETA	PHI	PSI	P	Q	R	RHO	OMEGA FR	OMEGA RR
THET	PHI	PSI	PB	QB	RB	RHO	OMEGFR	OMEGRR
DELB PLT	DELS PLT	DELR PLT	DELC PLT	DELB TOT	DELS TOT	DELR TOT	DELC TOT	H DOT
DLONP	DLATP	DYAWP	DCOLP	DLONTOT	DLATTOT	DYAWTOT	DCOLTOT	ALTD
THETO FR	AICFR	BICFR	THETO RR	XIXX	IYY	IZZ	IXZ	D. PRES F
57.3×THOFR	57.3×AICFR	57.3×BICFR	57.3×THORR		XIYY	XIZZ	XIXZ	QBAR
SIGMA FR	SIGMA RR	GAMMA FS		LAMDA FR	LAMDA RR	MU FR	MU RR	MACH NO.
SIGFR	SIGRR	GAMSFR		ALAMFR	ALAMRR	AMUFR	AMURR	XMACH
THRUST F	NORMAL F	SIDE F	TORQUE F	L HUB FR	M HUB FR	V TIP FR	DELTA FR	F FR
	HFR	YFR	QAERFR	ALHBFR	AMHBFR	VTIPFR	DELFR	FFR
THRUST R	NORMAL R	SIDE R	TORQUE R	L HUB RR	M HUB RR	V TIP RR	DELTA RR	FRR
TRR	HRR	YRR	QAERRR	ALHBRR	AMHBRR	VTIPRR	DELRR	FRR
CT FR	CH FR	CY FR	CQ FR	AO FR	A1 FR	B1 FR	Q GOV FR	
CTFR	CHFR	CYFR	CQFR	57.3×AOFR	57.3×A1FR	57.3×B1FR	QGOVFR	
CT RR	CH RR	CY RR	CQ RR	AO RR	A1 RR	B1 RR	Q GOV RR	
CTRR	CHRR	CYRR	CQRR	57.3×AORR	57.3×A1RR	57.3×B1RR	QCOVRR	
X FUSE	X SLING	LAMDA SL	X F. ROT	X R. ROT	X/M		BD FRF	BD FFR
XAERFS	XAERSL	ALML	XAERFR	XAERRR	AX		BDFRF	BDFFR
Y FUSE	Y SLING	NU SL	Y F. ROT	Y R. ROT	Y/M	A1CF BOD	BICF BOD	THOF BOD
YAERFS	YAERSL	ANUL	YAERFR	YAERRE	AY	57.3×A1CFRC	57.3×BICFRC	57.3×THOFRC
Z FUSE	Z SLING	MU SL	Z F. ROT	Z R. ROT	Z/M	AICR BOD	BICR BOD	THOR BOD
ZAERFS	0.0	AMUL	ZAERFR	ZAERRR	AZ	57.3×AICRRC	57.3×BICRRC	57.3×THORRC
L FUSE	L SLING	K BAR SL	L F. ROT	L R. ROT	L/IXX	LHBF BOD	LHBR BOD	PFR
ALARFS	0.0	SLKBAR	ALARFR	ALARRR	TTL/XIXX	ALBDFR	ALBDRR	PFR
M FUSE	M SLING		M F. ROT	M R. ROT	M/IYY	MHBF BOD	MHBR BOD	QFR
AMARFS	0.0		AMARFR	AMARRR	TTM/XIYY	AMBDFR	AMBDRR	QFR
N FUSE	N SLING		N F. ROT	N R. ROT	N/IZZ	AlfR BOD	A1RR BOD	PRR
ANARFS	ANARSL		ANARFR	ANARRR	TTN/XIZZ	57.3×AlBDFR	57.3×A1BDRR	PRR
BETA FS	BETA SL	SL WGHT	BETA FR	BETA RR		B1FR BOD	BIRR BOD	QRR
57.3×BETAFS	57.3×BETSL	WGHTSL	BETAFR	BETARR		57.3×B1BDFR	57.3×B1BDRR	QRR
ALPH FS 57.3×ALPHFS	ALPH SL 57.3×ALPHSL	J SL BJSL				HFR BODY HFRBOD	HRR BODY HRRBOD	
VINTF VINTF	THETA SL 57.3×THESL	L SL BLSL			WIRR WIRR	YFR BODY YFRBOD	YRR BODY YRRBOD	
WIFS WIFS	SMA SL SASL	R SL BRSL					A1CRR 57.3×A1CRR	BICRR 57.3×BICRR

Logical flags

ISLING IECSCON
IDCPT RSASP
RSASQ RSASR
ISTEADY NSTALL
NTROQCR NGREFF

Table entry
FORTRAN MNEMONIC

TABLE 4.- ARC VS. B.V. MODEL DYNAMIC RESPONSE DATA: FLIGHT CONDITIONS

Straight and level Gross weight = 33,000 lb I_{XX} = 34,000 slug-ft²
I_{yy} = 202,500 slug-ft²
I_{zz} = 191,000 slug-ft²
I_{xz} = 14,900 slug-ft²
I_{xy} = I_{yz} = 0
ΔX_{c.g.}

Figure	Perturbation	Equivalent
number	control	airspeed, knots
1-4	$\delta_{\mathbf{B}}$	0.1
5-8	$\delta_{\mathbf{A}}$.1
9-12	$\delta_{\mathbf{R}}^{\mathbf{r}}$.1
13-16	δC	.1
17-20	$\delta_{\mathrm{B}}^{\mathrm{o}}$	40.
21-24	$\delta_{ m A}$	40.
25-28	$\delta_{\mathbf{R}}$	40.
29-32	$\delta_{ m C}$	40.
33-36	$\delta_{ m B}$	75.
37-40	δ_{A}	75.
41-44	ÓR	75.
45-48	δ _C	75.
49-52	δ_{D}	115.
53-56	l ^O A I	115.
57-60	OR I	115.
61-64	δС	115.
65-68	$\delta_{ m B}$	130.
69-72	$\delta_{ m A}$	130.
73-76	$\delta_{\mathbf{R}}$	130.
77-80	δC	130.

TABLE 5.- B.V. SIMULATION VS. FLIGHT TEST DYNAMIC RESPONSE DATA: FLIGHT CONDITIONS

			F	light pa	rameters			
Figure number	Gross weight, 1b	Density altitude, ft	Rotor rpm	ΔX _{c.g.} (DXCG) in.	SAS config- uration	Equiv- alent airspeed, knots	Flight condition	Flight . test data refer- ence
81	37,000	2400	Nominal: 230	0.5	ON	Hover	Straight and level	2
82	36,780	980	233	6.6	ON	35	Straight and level	3
83	38,470	3220	Nominal	0	ON	70	Straight and level	2
84	33,320	5440	Nominal	17.8	ON	110	Straight and level	2
85	33,320	5440	Nominal	17.2	ON	115	Straight and level	2
86	36,700	4820	236	6.0	ON	127	Straight and level	3

TABLE 6.- ARC MODEL STATIC TRIM DATA: FLIGHT CONDITIONS
- SLUNG LOAD ATTACHED --

	Flight	Straight and level			•
	Relative slung load attitude, θ_{SL} , deg	0	0	5.	-5
_	Slung load weight,	7500.			
Flight parameters	Equivalent airspeed, knots	0.1	75	.1	75
Fligh	SAS config- uration	NO			-
	ΔX _{C.g.} (DXCĞ), in.	0			-
	Helicopter moments and products of inertia, slug-ft ²	7111		xy yz [7] $I_{xx} = 25,500$ $I_{yy} = 185,000$ $I_{zz} = 170,000$ $I_{xz} = 13,000$ $I_{xy} = I_{yz} = 0$	
	Helicopter weight, lb	25,500			-
	Table number	42	43	77	45

TABLE 7.- ARC VS. B.V. MODEL DYNAMIC RESPONSE DATA: FLIGHT CONDITIONS
- SLUNG LOAD ATTACHED -

Straight a SAS on Helicopter Helicopter Helicopter Helicopter Helicopter Melicopter $\Delta X_{C.g.}$ Slung load θ SL	weight = 25,500 I_{xx} = 25,500 I_{yy} = 185,50 I_{zz} = 170,00 I_{xz} = 13,000 I_{xy} = I_{yz} = 0	O slug-ft ² OO slug-ft ² OO slug-ft ² O slug-ft ² O slug-ft ²
Figure number	Perturbation control	airspeed,
87-89 90-92 93-95 96-98 99-101 102-104 105-107 108-110	δΒ δΑ δC δΒ δΑ δR δC	0.1 .1 .1 .1 75. 75. 75.

TABLE 8.- STATIC TRIM DATA

V_{eq} = 0.1 knot, SAS off

14:41 FEB 11:183 CH-478 TOTM DATA PUBLIC. 33

*								
∨TOT = G.W. = 33000.	.1 PT = 0 0 L83 PPH =	= .1 PT 24.1 H	v व च ोूने,तेहर	HIGHT TIME HOUSE	.511 111	. 1	11 5 .5 %	s.: •
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OT FR .482176-03	OH FF .126688-03	©7 FF .39440€ 04	00 FR .413:5E-03	. #1 FF . #50. 4E -41	toric Ministry	1 1 F*	0 4/0 4 F 14 5 14 5 4 1	
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ALPH FS 89684E 02	ALPH SL .26000E 01	J SL .77711E 04				HPP BODY .44314E 03	HPP 800° 45°27€ 07	
VINTF .41103E 02	THETA SL .00000E 00	L SL .20000E 02			991W 60 300680.	VFR BOIG .12440E 03	789 BOD7 12933E 03	
WIFS 30444E 02	SMA SL .20000E 02	R SL .80000E 01					AICER 44359E 00	BICPP .14996E 01
CONTRO ISLING IDCPT RSASO ISTEADY NTROCR ISLTPM	0 RSASP 0 RSASR 1 NSTALL 1 NGREFF	0 0 0 1						

TABLE 9.- STATIC TRIM DATA

$V_{eq} = 0.1 \text{ knot, SAS on}$

14:40 FEB 11,783 CTH-478 TRIM DATA RUN NO. 33

VTOT = G.W. = 33000.	.1 KT U Ø LBS RPM =	• .1 КТ 24.1 Н	V # # 97.0 FT	0 KT - W TEMP ≈ 288	TU 0. = = 2001 20 0.	(1 N) 0.	10 s. = 200	0. = 9HP N
THETA	PHI	PSI	P	0	₽	P∺O	OMEGA PE	0MEGA PR
.66120E 01	44531E 00	.00000E 00	.00000E 00	.00000E 0 0	.00000d£ 00	.23704E-82	.JAMESE OJ	.วิศษสรีษี ก ิวิ
DELB PLT	DELS PLT	DELR PLT	DELC PLT	DELB TOT	DELS TOT	DELF TOT	DELC TOT	н БЈТ
57220E-02	.22617E 00	322826-02	.57559E 01	572208-02	.22617E 90	33503E-03	.STOSSE 01	.000005 00
THETØ FR	AICFR	8ICFR	THETO RP.	INC:	IY/	150	EKC	0.8885 F
.18 552E 02	.41998E 00	15004E 01	.18559E 02	.34000E 05	.202508 06	.19100E 06	.14900€ 05	.10981E 01
SIGMA FP	SIGMA RP	GAMMA FS		LAMDA FP	LAMDA PP	10. ER	MU PP	1140H NO.
.66979E-01	.66979E-0∣	.41076€-02		56895E+01	575255 P1	.23571⊑ 65	.335670 03	.15144E-03
THPUST F	NORMAL F	SIDE F	10POHE F	L HUB FR	.0305/Jr 01	- T16 68	TELT4 FF	6 68
.16871E 05	.44325E 03	.12389E 03	.47371E 05	.91767E 03		- 72 988 03		.34 095 07
THPUST P	MORMAL P	SIDE P	10P0UE P	L HUB PP	11 eUU. FF:	V (LEFF)	₽E1 TH PP	E RE
.16690E 05	43538E 03	~.12910E 03	.43371€ 05	64867E 03	215154 904	,732°V/E US	. 107455 -01	34091E 60
CT FP	CH FP	CY FP	60 FP	80 FP	A1 E8	81 FP	0 SOVER	
.48217E-02	.12668E-03	.35408E-04	.41317E-03	.45674E 01	1150488 61	.43141E 0€	.48871F 65	
CT PR	CH RP	CY PP	00 PR	AO PR	#1 FF	81 PP	0 60V PF	
.47697E-02	12443E-03	~.36895E-04	.41221E-03	.45355E 01	149578 01	44256_ P\$.43271E 05	
X FUSE	X SLING	LAMDA SL	N F.POT	∺ P.POT	11 H		8⊅ FRF	ED FER
25000E 00	12388E 04	.00000E 00	.22016E 04	.15936E 04	16 387078.		.35012€ 00	.37.667E 00
Y FUSE	Y SLING	NU SL	7 F.PO⊺	7 P.POT	∀ M	6.165 BOD	BIOF BOD	≬HU% 80D
.20583E 00	.00000E 00	.00000E 00	.12429E 03	.12871E 03	.24707E 00	.401338 U0	15000E 01	.18552€ 00
Z FUSE	Z SLING	MU SL	Z F.POT	Z R.FOT	~.3190€€ 00	60.F 600	8108 800	THUE BOD
.57088E 03	.00000E 00	10255E 02	16733E 05	16619E 05		440 SE 60	.15000E 01	.18559E 02
L FUSE	L SLING	K BAP SL	L F.POT	L R.POT	L 1100	L 359 BOD	LHBR 800	₽₽₽
.21780E 00	.00000E 00	.10135E 01	52418E 04	.52385E 04	383736-07	.61945E 03	65064E 03	.ᲢᲔᲘᲢᲔᲜ ᲘᲛ
M FUSE	M SLING		M F.ROT	M R.ROT	M 1777	1568 BOD	MHBP BOD	0F8
, 030 96E 03	.00000E 00		.32757E 06	32841E 06	50000E-04	.23601E 0 4	31910E 04	.000001 0 0
N FUSE	N SLING		N F.POT	N P.POT	N: 127	A1FR 80D	4166 800	ԲԲԲ
50767E 00	.00000E 00		.45473E 05	45496E 05	12371E-03	.150446 01	14348E 01	.0∂0000E 00
BETA FS	BETA SL	SL WGHT	BETA FP	BETA PR		BITP BOD	81PP 80D	088
51618E-01	.00000E 00	.75000E 04	51319E-01	51338E-01		.422/5E 00	44390E 00	.000008 00
ALPH FS 89684E 02	ALPH SL .26000E 01	J SL .77711E 04				HNF 80177 .44314E 03	HPF BULG 43527E 03	
VINTF .41103E 02	THETA SL .00000E 00	L SL .20000E 02			WIFF .00000E 00	\FP BODY .12429E 03	VER BODV 12949E 03	
WIFS 30444E 02	SMA SL .20000E 02	R SL .80000E 01					AICRP 44397E 00	BICPR .14996E 01
CONTROI ISLING IDCPT RSASQ ISTEADY NTROCR ISLTRM	1 RSASP 1 RSASR 1 NSTALL 1 NGREFF	1 1 1						

TABLE 10.- STATIC TRIM DATA

$V_{eq} = 20 \text{ knots, SAS off}$

63-478 TRIM DATA RUN NO. 37

14:45 FEB 11.183

VTOT = 2 G.W. = 33000.	0.0 KT U 0 LBS RPM =	≠ 19.9 KT 24.1 н			= 1.9 FT 5.0 DG DC 5.	.01 1M 192	06 = .0 It	l PIEF = .
THETA	PHI	PSI	4	្រ	P	F 12	0M56A FP	UMBGA PP
.54756E 01	38583E 00	.00000E 00	.000 380000	ព្រះបារិយីមវិត គឺប្រ	.Outcode_oc	1114 - 181407	.24085E 02	.340485.
DELB PLT	DELS PLT	DEUP PUT	194 1491		14 (* 5) 7	हर्म २ विभाग	DELC TUT	TC1 H
14901E 01	.31625E 00	.04915E 00	10 AEBOAR.		13 (8) 30 (9)	प्रतासिक सम्ब	,5eendSp Di	gg 300988.
THET0 FR	AICER	810FR	THETO PP	1 00	$\frac{\Gamma(0)}{2\pi e^{2T} e^{2T} + 0} \cdot$	27	I-Z	19.5985 F
.17350E 02	.12044E 01	15003E 01	.19183E 93*	. (4000E US		23 36-36 00	.14900E US	.19586E 0 1
SIGMA FR	SIGMA PR	GAMMA ES		LaMDa FP	161106 FF	ink ER	MU FR	MASH NO.
.66979E-01	.66979E-01	.80054E 00		45390E-01	633178 91	, 46 아니바-방1	.46767E-01	.540388-01
THRUST F	MOPMAL F	SIDE F	TG₽098 F	L HU8 FF		TJE EP	1/EUTH FF	⊩ FF
.16633E 05	.69873E 03	.38148€ 03	.33085E ∂5	1633E 04		.13 TWE OS	. 10735E =+11	.34990E 05
THPUST R	NORMAL R	SIDE F	700008 €	L MUF FF	H.H +5	s TIPE€	DELTH FF	9 98
.16775E 05	13963E 03	.16288E 03	.420078 05	.97447E Ø3		PE PE	10760F-⊬1	.34-909 07
CT FR	CH FR	0 - FF	00 FR	+0 FF	44 15	:1 FP	0 00V FF	
.47537E-02	.19969E-03	.10903E-03	.30566E-03	.43666€ 01	.2305/01 U1	.14759E 01	.32085E 05	
CT PR	CH PR	011 RF	00 F9	14(1 PP	#1 FF	81 PP	0 60% FF	
.47941E-03	39906E-04	.465538-04	.40780E-03	145(0)15(1 0)1	577-1, CO	.66-483E 60	.4260 € 05	
X FUSE	≈ SEING	եգիխգ Տե	F.POT	∷ R.POT	11.10		BD FFF	8D FF®
72448E 02	12388E 04	.000000 մա	.19121E 04	.13003E 04	,307,98.01		1844488 000	.95037E 00
Y FUSE	, SLING	NU SL	F.FAT	7 P.801	7 (1	រប់ក្រុម ពីលោក		THOF 800
.22038E 01	60 300000.	.000000 00	.88193E 413	16090E-03	., 15 (0) (0)	រដ្ឋាភាគ សុរ		.17350E 83
Z FUSE	2 Stilf6	MU SL	2 F.#0T	्र ए.भाज	2.11	449 P BOD	8108 801	THOP BOD
.41296E 03	00 300000.	10255E 00	≃.16540£ ∂9	. 10 .या. 85	3.055, 4.00	14 4 45 00	150008 01	.1∃183E 82
L FUSE	L SEING	⊬ Ba⊬ 01	1.601	լ Թ.ԲՕՊ	L 1 1	1969 BOD	UMBE 800	₽FF
12384E 02	.000000.	.101558 01	197846 02	.Տ155.ՄE ԾՀ	151. M. 64	126748 84	1973938 63	.00-1005 00
M FUSE	11 SLING		11 F.F01	01 8.80T	## In-	11866 6:15	0HB9 F0D	0FP
14271E 04	.000000		80 3 08805.	325488 06	16067E ##	.8,5026 04	84738& US	.00000E 00
N FUSE 6 5 996E 02	# SLING 00 300000.		0 F.RGT .39832E 05	N F.FOT 397826 05	N 133 .18857F	6.688 800 .180 90 01		999 00 390060.
BETA FS 36985E-01	88TA SL .000008 00	SŁ WGH⊺ .75000E 04	FETA FF 36836E-01	BEIH PP 36329E-01		E.FE 100 14554E 01		088 .000008
ALPH FS 33697E 02	ALPH SL .26000E 01	J 5E .77711E 04				HPP 8000 80 38486	HPP B00/ 13974E Ø3	
VINTF .30655E 02	THETA SL .00000E 00	L SE .20000E 03			₩IPP .000000.	779 8017 .381338 03	788 8057 .16279E 03	
WIFS 25664E 02	SMA SL .20000£ 02	₽ SL .80000E 01					AICRP .37829E 00	BICPR .15002E 01
	0 RSASR 1 NSTALL 1 NGREFF	ខ ១ ១ 1						

TABLE 11.- STATIC TRIM DATA

$V_{eq} = 20 \text{ knots, SAS on}$

15:17 FEB 11.183

CH-47B TRIM DATA PUN NO. 57

VTOT ± 2 G.W. = 33000.	20.0 kT U .0 LBS RPM =	= 19.9 KT 24.1 H	V = ≈ 97.5 F1	÷.0 KT - W 1 TEMP ≠ 288	= 1.9 KT 3.0 IS 1006 =	.ō IN D	1 n. = 300	0. ≈ ¹ 44 Ķ
THETA	PHI	₽\$	P	0	F	£HC	OMEGALER	OMEGA PR
.54760E 01	∼.38616€ 00	.00000E 00	.00000E 00	.08888 80	.00000: 00	.23764F-02	LOGNORE NO	./48950 07
DELB PLT	DELS PLT	#ELP PLT	DELC PUT	PEL8 TCT	The state of the s	060.P TOT	DECU 1911	101 n
14901E 01	.21587E 00	.39086E 00	.50000E 01	14901€ 01		12501/16 KW	,1≤0007E 911	ug Bayana,
THETO FR	AICER	B10F€	THETØ FF	1986	1977	133	I 20	0.8985 €
.17350E 02	.12075€ 01	15008E 01	.19183E 03 °	.34000E 05	.202007 36	.19100E 06	.14900E US	.19135E 01
SIGMA FR	SIGNA PP	GANNA ES		LAMDA FR	LAMMA PF	NU FP	NU FF	#40H No.
.66979E-01	.66979E-01	.80054E 00		453016+01	6381JL1	.461794E-0;	, 4: 7676 -91	.307994E-@1
THPUST F	NOPMAL F	SIDE F	TOPOUE F	1 HUB FP	11 ×8,5 (F)	V 1[8 FP	DELTH FF	F F#
.16633E 05	.69871E 03	.38238E 03	.72M84E 05	.31680E 04	33/30 × (F)	.00.05E U3	LEUTZGE →11	. 49508 07
THRUST P	NORMAL P	SIDE P	†อคอบ6 ค	L MUS PF	13 H (R 5 P)	# TIPEP.	DEL TALAF	F PF
.16774E 05	∼.13964E 03	.16424E 03	.428076 คร	.93125E Ø3	= . 8.4666		. 10760E -01	.349909 07
CT F9	OH FR	CY FP	CO FP	AO FP	81 FF	01 FF	0 600 FF	
.47536E-02	.19969E-03	.10928E-03	.30565E-03	.43665€ O:	.230576 81	.147016 61	.30084E 85	
CT PR	CH RR	EY RP	00 PP	A0 RF	∺1 °8	I., FP	0 600 FF	
.47940E-02	39907E-04	.46937E-04	.40780E-43	.46003E 01	~.577658 na	.66°5∞E-MC	.40007F 65	
X FUSE	⊠ SLING	երինի Տե	:: ค.คตา	33 P.POT	.91 ()		E4-F89	(4) +1 €
72448E 03	12388€ 04	.000000 00	:191216 คล	.13093E 04	.307056 ()		. 19440E - 60	, 45(1) £ . UD
Y FUSE	7 SLING	NU SL	7 F.P0T	V F.POT	77-73	305F [30]	- Tagante vil	7:00f But
.22039E 01	.00000E 00	.00000C 00	38283E 03	16432E 03	1345 363 - 76	31 MCH 31		17:550f 0,
Z FUSE	2 SLING	MU SL	2 €.901	2 P.P0⊺	. 5.145. F. (0.1	ALCH BOTH	£10€ Bul	Houk BOD
.41296E 03	80 300000.	10255€ 00	165325 05	.16024€ 05	- , 5.145. F. (0.1	Lond of and	.15000€ 01	.19105E ∂.7
L FUSE	և Տելին	⊭ BAF SL	L F.RUT	F.FOT	1. 1111	LEGIT FOLD	LHOF BUD	FFF
12384E 02	.000000 00	.10135E 01	83744E 01	.83018€ 01	.36343E 611	LEGIT OUT	.9307ME US	, Overgoep (on
M FUSE	M SLING		M F.P⊍T	M R.ROT	M 1++	THEF FOR	MHBF 80⊅	058
14270E 04	.00000E อดี		.32691E Ø6	32549E 06	117288 04	.3070.8 04	84732E 83	.000005 00
N FUSE	N SLING		N E.POT	N P.ROT	н IC.	н188 вор	A188 800	499
65995E 02	.00000E 00		.39850E 05	39737E 05	.24544E-03	.230-рв А1	17888E 00	.00 300000
8ETA FS	BETA SL	SL UGHT	887H FP	BETA PP		8:FP 801	81PP 80D	089
37019E-01	.00000E 00	.75000E 04	36930F-01	368626-01		.14086E 01	.66903E 00	.000000
ALPH FS 33696E 02	ALPH SL .26000E 81	J SL .77711E 04				HEP BODY FO BILLION.	HPP BODG +.139748 03	
VINTF .30655E 02	THETA SL .00000E 00	L SL .2000⊎E 02			WIPP .000000	VFN BOIT		
WIFS 25663E 02	SMA SL .20000E 02	R SL .80000E 01					AICRR .38291E 00	BICRR .15002E 01
	1 RSASR 1 1 NSTALL 1 1 NGREFF 0							

TABLE 12.- STATIC TRIM DATA

V_{eq} = 40 knots, SAS off

CH-47B TRIM DATA PUN NO. 41

14:49 FEB 11.183

14:49 FEB	11, 55			FUR IN	'. →1				
VTOT = 4 G.W. = 33000.	Ø.Ø KT U Ø LBS RPM =	= 39.9 kT 24.1 H	V = = 98.0 F1	+.0 KT W TEMP = 280	= 3.0 PT 0.0 00 NT3 =	.50 HI 6.	4I છે.	I PHP = .	.0
THETA .42599E 01	PHI 29411E 00	PSI .00000E 00	P .000003E 90	შ .შმ მმნ შ მ	P .00004F F	F -0 .23: 03E-03	ერნეფ გნ .ე4085E მე	೧№560 PP .34485€ 00	
DELB PLT 23407E 01	DELS PLT .21366E 00	DELP PLT .37495E 00	DE⊾C PLT .51744E 01	1018 TOF 23407E 01	DELS TOT .213638 00	IFUR TOT .37495E RA	JE¥6 TOT .51744€ 01	H 19T .0000000	
THETO FP .16035E 02	AICER .15998E 01	BICFF 15006E 01	THETO RR .18914E 02	I::: .34000E 05	TV .30253F (1)	100 .19100€ 06	102 .143088 03	INTERES F .555998 01	
SIGMA FR .66979E-01	SIGNA PP .66979E-01	GANMA FS .123208 01		լեՄ⊅Գ ԲԲ ⊬. 200545-01	- Marker Ea	11: EP .93. WE-01	(81 PF .905651-01	เพียด 40. .685778-01	
THRUST F .16456E 05	108MAL F .98044E 03	\$1DE F .495498 03	TOPOUE F .32480E 05	ն ԽՍB ԲԻ . ՉԳԳՐԱՑ ՄՅ	# ### F# 41 25 25 14	V TIE ER .TB. THE ME	JELTH FF . 1000075 - 01	៖ 68 . 545005 - គួក	
THRUST P .16884E 05	HOPMAL P .14919E 03	SIDE P .33805E 03	TGROJE P .38901⊦ 05	1 1838 99 137898 04	11 HUTE FF ,44:17	U TIPPA .ES.TSE 03	DELIH FF .10780E 01	# #P .34.90% 07	
0T FP .47031E-02	CH FR .25734E-03	CT FF .14161E-03	00 FP .21416E-03	-0 PP ,41468E 01	#1 16 .203(*) - [01 FF .31:37E A1	1 60% FF .20430F 115		
OT RP .48354E-03	CH P₽ .42638E-04	CV PF .93757E+04	60 PE .370596-03	н0 РР .45505E 01	61 11 .901 25 x 1	6-1 FF .13 P35E 01	0 GUV ER .33901E US		
X FUSE 26260E 03	% SLING 13388E 04	LADDA SL .000008 00	## F.POT .16851E 04	% P.FOT .10388E 04	:: H .339138 #01		BD FER .61756E-01	BD FFP .165518 01	
Y FUSE .10885E 01	7 SLING .00000E 00	NU SL .00000E 00	V F.₽0T .49583E 03	/ P.POT 32800E 03	Y 11 .16487F 90	(210F B0D .16(00 ME 01	810F 800 150008 01	THOF BOD .16035E 02	
Z FUSE .33934E 03	Z SLING .00000E 00	MU SE 10355E 03	Z F.₽0T −.16394E 05	Z P.ROT 16853E 05	2 ° 32119E 90	ні Р 801 .784246 00	BIOF 800 .15000E 01	⊺HO9 BOD .18914E 02	
L FUSE 10000E 02	L SLING .00000E 00	K BAP SL .10135E 01	L F.⊬0⊺ .32579€ 04	L P.₽0⊺ 32480E 04	L : 1983 +.32036F: AM	LHBR 80D .30990E 04	LHBR BOD .19782E 84	PFF .00000E 00	
M FUSE 34349E 04	M SLING .00000E 00		M F.ROT .32661E 06	## P.POT 32317€ 06	#-1777 101856-04	11988 8000 .401578 04	11HBP 800 .447378 03	#FF .00000E 00	
N FUSE .70334E 02	N SLING .00000E 00		N F.ROT .33818E 05	N P.POT 32889£ 05	N 133 29859€-05	A1FP B0D .3940.3 01	AIPP 800 .30532E 00	FFF .000005 00	
BETA FS 21907E-01	BETA SL .00000E 00	SL WGHT .75000E 04	BETA FR 21922E-01	BETA RP 21847E-01		B109 B00 . 1140E 01	81PP 80D .13496E 01	088 .000000E 00	
ALPH FS 10154E 02	ALPH SL .26000E 01	J SL .77711E 04				HFT BODY .9002 € 03	HPP BODY .14906E 03		
VINTF .18152E 02	THETA SL .00000E 00	L SL .20000E 02			WIRP 80 300600.	YER 805Y .49583E 03	VPR BODY .32811E 03		
WIFS 17096E 02	SMA SL .20000E 02	R SL .80000E 01					AICRR .78367E 00	BICRP .15003E 01	
	0 RSASR 1 MSTALL 1 NGREFF	0 0 0 !							

TABLE 13.- STATIC TRIM DATA

$V_{eq} = 40$ knots, SAS on

14:36 FEB 11.183 CTH473 TRIM DATA PUN HO. 29

	• • • • • • • • • • • • • • • • • • • •			1 311 11				
∨†0† = 4 G.W. = 33000.	0.0 FT U 0 LBS PPM =	= 39.9 KT 34.1 H	V * = 98.8 F	+.a + T	= 3.6 KT 1.8 DG BC 5 =	.ո 🙀 ნշ	[[5 = .]]	I PHr = .0
THETA	PHI	PSI	P	0	9	P+47	ี่ เปลดยังกับ	09800 PP
.42600E 01	29424E 0 0	.00000E 00	.000008 AR	.សុភាប ស ម សិប	194 "Jacomig.	.23/13E-M2	เปลดยังกับกับ	.24-350 DJ
DELB PLT	DELS PLT	DELP PLT	P€UC FLF	0608 TOT	DELCTOT	14 LP 16T	16:00 10T	्राह्मा । अस्तु ।
23407E 01	.213608 00	000 386878.	.91744€ 01	334078 01	.gladet en	.579 048 19	.5(17.44E-00)	स्थान
THET0 FP	∺ICFR	BICEP	THRIO RM	1 00	1777	:///	1107	0.4695 F
.16035E 02	.16000€ 01	!5006E 01	13914E 03	. Willee 05	1707 (507 - 56	.1918កាក្ ១៩	.1400001 000	.55504E 01
SIGMA FR	SIGMA PP	GANNA FS		1/840A FF	L-001 FF	11, FF	THE PTO	NeGe NO.
.66979E-01	.66979E-01	.12320E 01		33354E-01	- LE05 [001] 711	, (5, 5) [-01]	THE STATE OF E	.ㅎ드라고 01
THPUST F	NOPMAL F	3IDE F	10#701E F	L HUS FF	(* 1907) 1 F	VITTE EP	IN LIGHT.	4 - 148
.16456E 05	.90045E 03	.49554E 03	.22480E 05	.RO~,'NE n4	14190 27 (+ 1	.C.TTC 03		- 340 001 - 197
THRUST R	NORMAL P	SIDE P	10POUE P	լ HUB PP	11 HUC. PP	MARTINE	140 15c FP	1 PP
.16884E 05	.14919€ 03	.33818E 03	.38901E 05	.1978ԽE 04	.44814E 53	PROJECTION	, 10,000 (0.1	.:4090E HZ
CT FP	CH FF	CY FF	00 FP	คติ FR	61 FF	81 FF	00 190 v ² (14	
.47031E-02	.25735E-03	.14162E-03	.21416E-03	.41-659E ปี1	.29308.01	.31840 01	17: 409 ² - 15)	
CT PR	CH RP	CY RP	CÐ RP	A0 PP	A1 89	81 PF	200-0-11E - 61E	
.48255E-02	.42639E÷04	.93792E-04	.37060€-03	.45556E 01	.305,576 cm	.13403 01	02 - 140-07 - 14E	
X FUSE	% SLING	LAMDA SL	∷ F.POT	00 8.80T	E 11		F(D) 1 F(F)	80 FFF
26260E 03	12388E 04	.08008E 88	.16851E 04	.1008#E 04	.2391.E 01		.6:1756 F - 8:1	.16551F 01
Y FUSE	Y SLING	NU SL	V F.POT	Y P.POT	70 H	₩108 E01	\$(107 E00)	1806 800
.10885E 01	.00000E 00	.00000E 00	.49588E 03	32017E 03	.16476E 00	.169000€ 01	15%000E #1	.16086 00
Z FUSE	Z SLING	110 SL	Z F.POT	2 P.POT	E #1	#ICP BOD	810F 80D	1800 800
.33934E 03	.00000E 00	10255E 02	16394E 05	168538 05	32110E 00	.78404E 08	.15000E 01	.18914E 00
L FUSE	L SLING	K BAR SL	L F.ROT	L P.P07	L 4001	£HBF 80⊅	LHBP BUD	EFF
10000E 02	.00000E 00	.10135E 01	.32586E 04	32501E 04	44513E+64	.30793€ 04	.1972명 미리	, Quantil Finn
M FUSE	M SLING		M F.POT	M P.POI	ุก กา	MHBF 800	MHBR 800	(58
34349E 04	.00000E 00		.32661E 06	32318E 06	1358ก⊱ค4	.429576 04	.44739E 03	.000000
N FUSE	N SLING		N F.ROT	N R.POT	NHTZZ	н18Р ВОБ	AIPE 800	999
.70334E 02	.00000E 00		.32819E 05	33887E 05	.13414€-84	.29307E ОТ	305238 00	.000000
BETA FS	BETA SL	SL WGHT	BETA FR	BETA RF		81FP 80D	BIRR £00	410
21917E-01	.00000E 00	.75000E 04	+.21932E-01	21857E-01		.31145E 01	.13500£ 01	00 106066.
ALPH FS 10154E 02	ALPH SL .26000E 01	J SL .77711E 04				HER BODY .90026E 03	HPR BODY .14907E 03	
VINTF .18152E 02	THETA SL .00000E 00	L SL .20000E 02			WIPR .000000 00	768 8007 .49588E 03	YPR 8017 .32823E 03	
WIFS 17096E 02	SMA SL .20000E 02	₽ SL .80000E 01					AICPP .78407E 00	BICPP .15003E 01
CONTROL ISLING IDCPT RSASQ ISTEADY NTROCR ISLTRM	1 RSASP 1 RSASR 1 NSTALL 1 NGREFF (1 1 1						

TABLE 14.- STATIC TRIM DATA

$V_{eq} = 60 \text{ knots, SAS off}$

98-478 TRIM DATA FUN HG. 57

15:21 FEB 11,183

13.21 FED	11, 65			FUN HI.	. 50			
VTOT ≃ - 6 G.W. = 33000.	0.0 FT U 0 LBS PPM =	≃ 60.0 k~ 34.1 H	V = = 38.6 FT	0 FT1 TSDE - 2003	= 7.1 FT .0 IO	.0% IH - DC	75 m .e :	N FHF0
THETA .29602E 01	PHI 34453E 00	PS: .08000E 6d	9 .900909 03	ට , ගමන්වේල්ලි අල	គ្ រូមិប៉ាមេរិកា ្រ	# 40 .004 31 40400	0MEGA ។ទ លាង២៩៩០ ១៩	ាយ គួផុ ទទ រូបជាស្រីសាស្រី
⊅EL8 PLT 18341E 01	DÉUS PLT .19714E 00	DELP HIT .358898	ातात सा.र .484545 ते।	DELE FOR 18241E O1	(8) 1/1 .1971/5 Pat	771 asisi da Pulis 1911	DELC TOT W-45-4E 01	ក់ E ប្រ .សេសសេស ស្រី
THET0 FR .15555E 02	AICER .11995E 01	810FP 15003E 01	1HET0 PP .177300 03	1901 , इन्हेसमाहः अक्	177) , 2025 ef - 667	175 1816-06-06	1:1: 1:1:	ებ.გეგენ .1220950 ტე
SIGMA FR .669796-01	916MA PP 10-369836.	GANDH ES .135376 Ol		i н/Ка FP 507 ЫE-Ы1	Lenha F5 4781.77 6.	U1 FF .17 575 00	한테 FP 14레동국인 현대	Ո⊟ԼԱ NO. .ԳԵ⊶ՇԵԸ 0:
THPUST F .16270E 05	MOPNAL F .10886E 04	SIDE ก .378936 คร	108100E F .19880E US	L HOB FP .:4375# H4	Hambert Gladet och	7 TIB FR 72758 03	PELTH FF .19671E-01	1 14 749096 67
THRUST P .17092E 05	NOPMAL P .38409E 03	5108 8 .239538 63	TOROUS R On Forence	. From His His	TERMINE LEMONIE VII	MOTHER LOCAL DE LOCAL	[ELIM PF	F FF Sancter of
0T FP .46503E-0."	OH FF .31113E-03	07 FP .100335-43	: सं । कि . 15 कि न जिल्ला	eath file constant in the	pro Ind.	1	and proceed . Product option	
0T PF .48848E 00	OH PF 1097 E⊸43	्रमा क्षेत्रक्षाः इस्तरक्ष्यक्षस्य स्थाप	Live NA Constant for	4.1 (0) + 411	41 *i	1.1 11:1700-01	a mentaka Permasa per	
% FUSE ÷.574958 03	11 SEING 12388E 04	Latilon IL .000005 on	:+.kaf :14701E 04	F . H	eq. Transfer are:		E[0 F]4 [44 H.8 F - 14]	110 3 FF 3 13 70 15 91
Y FUSE .832828 00	, StInG .00000E ∂0	NG St សោកភាព គឺក	- តុស្តាល់ ខ្លួសស្រាស់	richents racPalleta	. H . September 1990	415.6 FOF	819F 80F - 15a99E 01	(HUE BOD) 195555 DU
Z FUSE .36168E 03	2 SLING .00000E NO	10055E 0.	7 F.F°19↑ 1574057 405		: 'i' 'i'	14 h k 1981) 14 h 754 ma	[.](F {86]) .}5#8##[41]	0:83 HOH: ,0 468575.
L FUSE 23574E 03	ե Դե 1 86 .00000E നെ	(B∺F) .10(25€ 01	764,3 J 16 H 4465.	j - 61,400 f 50144E-114	Total Posture Comment	0.000 400I 1.0000000000000000000000000000000000	CHERTEND 11555 F PM	ម្រាស់ ស្រាស់ព្រះ ព្រះ
M FUSE 23243E 04	N SLING .00000E 00		M F.ROT .3/5958 86	10 F. Root 3070375.	State of the state	្រាស់ ភេស្សាយ ស្ន	FIMBER (OLD) LIGHBLOOF ON	្រាស់ ពិព័លម៉ង់ទី ម៉ឺង
N FUSE 40113E 02	# 5£ING .00000E 00		4 F.F0⊺ .37745E ∂°	# 21.8 H 1 W. L	1/2 (2.07) (1.17)	GIFP EOF	4118 FJD 90 AMESC.	៖ PF . បានប្រកួត ពិពិ
8ETA FS 12645E-01	BETA SE .00000E 00	SE WGHT .7500∂E 04	€E7A FR -,1,603E NI	DETH PP		FIFE 800 .100 88 01	0188 201 1285 1 81	19-2 . 00:0000 - 00:
ALPH F5 36807E 01	ALPH SL .26000E 01	7 SE .77711E 04				F1F 8017 .005852 04	संभक्त है।।ाँ⊲ .डा.्यम्ब्र छड	
VINTF .11577E 02	THETA SL .00000E 00	L SL .20000E 02			W1FF .00000E 00	766 BOIN 37983E 03	VPF EODY .23962E 63	
WIFS 11752E 02	SMA SL .20000E 02	R SL .80000E 01					AJERR .44641E 00	BICRP .15001E 01
	0 RSASR 0 1 NSTALL : 1 NGREFF 0) } !						

TABLE 15.- STATIC TRIM DATA

$V_{eq} = 60 \text{ knots, SAS on}$

15:14 FEB 11.183 CH-47B TP:11 DATA FUN NO. 57

	50.0 kT U .0 LBS PPM =	= 60.0 FT 24.1 H			* 3.147 4.646 b(6 -	- IN D7	កាច្ន ព្រះ	0. = 'HF' N
THETA	PHI	PSI	P	()	₽	#9.5	สักษ์สักษ์	HERGA PP
.29602E 01	244468 00	.00000E 08	.000000 00	.000.000F (p)	.ბტცებშ ან	.25. 56+60	400%£ คือ	JUNGSTER
DELB PLT	#####################################	DELP FLT	FELC F1.T	0000 707	1617 101	Marker 101	1081 (1087	H [m][
22233E 01		.26046E 00	.47495E 01	.180416 01	.1921/2003	Production	.474556 (0)	.មាមមា អូម
THETO FR	⊕[CEP	810FP	THETU F₩	1181	1777	177	170	10.8885 F
.15555E 03	.11998£ 01	15003E 01	.17798E 02	.54000E 05	. 2005 568 - 69	1940/9 06	14999E AS	.1.1066 02
SIGMA FP	916MA PP	GAMMA ES		եերիծ FP	LHCTON RF	180 FF	14년 환편	14618 NO.
.66979E-01	10-367833.	.13537E OL		30790€ Ո:	-1478176 OI	13 17F MO	- 144년 3년 - 대한	.905 set -01
THRUST F	NOPHAL F	5108 F	TOPOUE ค	.28379E 04	1148,6 €	7757 08 03	INLETO 1F	F FF
.16271E 05	.10886E 04	.379098 03	.198006 คร		-516055 64	7 716 FF	.19671F-01	.34 0000 000
THPUST R	MORMAL P	ପାଠାର ନ	10คลมย ค	1 HUB PP	11 88 18	V TIPER	DELL (H. 616)	E RE
.17092E 05	.38409E 03	.ଅଞ୍ଚଳ୍ୟ ପ୍ର	.สวกกรย สร	.1855/6 04	1450 Cour	. TOUR E PS	1440/1766 - 411	SECURITOR
OT FP .46502E-02	OH FF .3!113E-03	67 FF .19834E 03	00 PP .103578 63	600 FF .390-901, 611	41 . * . *** *	F. FF .1900.E 01	To Carry Fig.	
OT PR .48848E-03	(HLPR 10007E-03	լ / PA .68487E-04	10 PF .3M ^C 508-813	. (0 - P/P) . 44k (116k - 614	60) 64 .900947 (a)	1 1 FF 11 0 08 F1	BORNER ME	
Ж FUSE	00 SLING	LANDA SE	. F.ROT	F.FOT	11.48		E(1) F F/F	EJC FFF
57495E 03	12388E 04	.00000E OA	.14702E на	BORBSE US	. 16.6% (0. 401		1.489F DE - 6(1	-17701H. 01
Y FUSE	7 St. 196	NU SL	Y F.AUT	Y R.ROI	7 11	6410F EOD	E 10 F (1001)	THUS END
.82200E 00	.00000E .00	.00000E 0A	.37935E 03	289556 03	1137. (6) 705	.10003E 01	15 June (111	.15955E 02
Z FUSE	Z SLING	110 5€	2 €.£01	2 P.FOT	2 11	#10F 80D	816F 805	1808 800
.36168E 03	.000000 00	10255€ 00	16341€ AM	1/86/7E 95	5.30150E 351	.44700 00	.15000E 81	177988 02
L FUSE	L SLING	⊦ 8AP 5L	է Բ.ԹևԾ	L A.MOT	L 41""	1985 BOD	LHER EUD	F1F F
22574E 02	.00000E 00	.10135E 01	.2547ԳԲ Թ4	140 Jepunge.	1036 H1	11883 OU	.185%e8 04	. 048101-16 - 100
M FUSE	// SLING		11 €.₽0⊺	104.9.10	11 I 77	THEF BOD	THER FOUL	ម្រាក់
23243E 04	.000000 00		.32595E 06	30 303803	. 194 <i>577 -</i> 64	SIN ME OU	14490F NO	ស្រាស់ ១៥ មាន
N FUSE	N SLING		N F.POT	# P.POT	N 107	#15 P 000	#165 EVID	1994
40113E 02	80 300000.		.2775∂E ∂S	~~USE US	. 2480 H84	- 35 P 01 01	1539156 EVI	. 1994 - 1994 - 1994
BETA F5	86TA SL	SL WGHT	ВЕТи РР	BETÜ PF		409 9419	6188 800	ប្រទៃ
+.12641E-01	.00000E 00	.75000E 04	12095€ и1	12526E-01		10 36 821.	.126608 01	ព្រះមានស្រាញ
ALPH F5 36807E 01	4LPH 5E 10 300085.	J 5t. .77711E 04				₩ P EUF: . D1 - USE - 04	HPP 8000 ՀՑԱՄԱՆ ՄՅ	
VINTF .11577E 02	THETA SL .00000E 00	L SL .20000E 02			UIPP OO BOGOOG.	VER BODY .37933E 03	VPP BODY .23971E 03	
₩IFS 11 7 52E 02	SMA SL .20000E 02	R SL .80000€ 01					AICRR .44675E 00	BICRR .15001E 01
CONTROL ISLING IDEPT PSASO ISTEADY NTPOEP ISLTPM	1 RSASP 1 1 PSASP 1 1 NSTALL 1 1 NGPEFF 0							

TABLE 16.- STATIC TRIM DATA

$V_{eq} = 80 \text{ knots, SAS off}$

СН-478 ТРДЬ БАТА РШН NO. 57 15:23 FEB 1

3 FEB	11.183		PUH HO.
3 1 20	11. 03		

∨TOT = 86 G.W. = 33000.6	0.0 kT U 0 LB5 RPM =	* 80.0 FT 24.1 H	V = ≈ 98.6 F1	0 FT - W F TatiP = 080	= 4.1 (T 3.0 Id RTA =	P IN D	ភ⊑ ខ ខា	1 FHT = .0
THETA	PHI	PSI	P	0	₽	786	UMBGA FR	HMEGA PP
.29508E 01	34199E 00	.000000 00	.მმდმმმგ მმ	.00363E 30	.880246 51	.⊺7863€-03	JAGGSE 80	.14 H588 00
DELB PLT 11228E 01	DELS PLT .17539E 00	DELP PuT .11530E 00	₽ELC PLT .46384E 01	DECH TOT	1841 107 1753 a. 61	1980 - 107 110 - 111	₽E16 MOT .48204E 01	to the post of the
THETO FP	A1055	BICFP	THET0 F♥	Mills	1 7	11 - 42 86	TOT	0.9865 F
.15768E 02	.70133E 00	18387E:03	.17149E 03	PadicylE light	.203.5544 4 4 4		TARGETE AS	.007450 00
SIGNA FP	SIGNA RP	GANNA 65		1 #3154 FF	Lattea SE	triff	180 FF	Пебн 90.
.66979E-01	.66979E-01	.148146 0)		-, 313.0E-01	172 - 40 a	.L. 0030 00	130 100 - 00	.13115Е фи
THPUST F	NQPMAL F	SIDE F	TOFOGE F	L ADB FF	14 HUG 43	- 11E EF	DELTH 1:	F FF
.164118 05	.89806E 03	.25639E 03	.2075/E 05	.:4482E 04	13998.F.	- 71 2 5E 08	.108968-01	.340836 07
THPUST R	NOPMAL P	SIDE P	T0F0∪€ F	L 1888 FF	11 H JH FF	TIPPE	IFCTH FF	F FF
.16985E 05	.15186E 03	.11881E 03	.28036E 05	.15691E 04	165555 6:		. 10793E-#1	.71489E 07
CT FR	OH FP	CY FF	00 FP	н∂ FP	н1 66	R' FF	0 607 FF	
.46904E-03	.25667E-03	.73279E-04	.19775E-03	.39727E 01	.27. к. б. б.	.1t38501	.30757E 65	
CT PR	CH PR	07 PP	00 RP	A0 A0	A1 PE	01 PR	0 GOM FF	
.48543E-02	.43401E-04	.33955E-04	.26709E:03	.40413E 01	.113966 00	.10005E 01	.28036E 85	
% FUSE	00 SEING	LAMPA SE	% F.P0T	:: R.POT	11 M		8D FPF	8D FER
10147E 04	12388E 04	.00000E 00	.16804E 04	.10333E 04	1956778 01		+.34793E-01	.16974E 01
Y FUSE	Y SLING	NO SL	Y F.80T	7 F.ROT	∿ N	HICE BOD	BIUF BOD	140F 80D
.14545E 01	.00000E 00	.00000E 00	.25659E 03	11877E 03	.17590E ∂O	.70153E 00	95%67E-05	.15768E 02
Z FUSE	2 SLING	MU SL	Z F.ROT	Z R.ROT	Z 11	A468 BOD	BICP BOD	THOP BOD
.34819E 03	.00000E 00	10255E 03	−.16350E 05	16954E 05	33156E 03	.31338E-01	.30000E 01	.17149E 02
L FUSE	L SLING	⊩ BAR SL	L F.POT	L P.POT	L DOM	1945 BOD	LHBP BOD	₽₽₽
+.39639E 02	.0000 0 E 00	.10135E 01	.10937E 04	10540E 04	.29512E-05	1344018 O4	.15693E 04	.000000E 00
M FUSE	M SLING		M F.POT	-11 R.POT	MHTWY	MREE BOD	MHBF 80D	0FP
58710E 02	.00000E 00		.32544E 06	32537E 06	.685198-04	.394536 04	.16523E 03	.00000E 00
N FUSE	N SLING		N F.ROT	N F.POT	H-122	н1ER BOD	A188 80D	FPF
24125E 03	.00000E 00		.26126E 05	25885E 05	.25368E-05	.27278E 01	.11373E 80	.00000E 00
8ETA FS	BETA SL	.SL WGHT	BETA FR	BETA RP		B1FP B0D	BIPF 800	0PP
12474E-01	.00000E 00	.75000E 04	12527E-01	134598-01		.16709E 01	.10706E 01	.00000E 00
ALPH FS 85260E 00	ALPH SL .26000E 01	J SL .77711E 04				HPP BODY 36 300888.	HRR BODY .15183E 03	
VINTF .87476E 01	THETA SL .00000E 00	L SL .20000E 02			WIPP 00 300000.	7FP BODY .25659€ 03	YRR BODY .11884E 03	
WIFS 89700E 01	SMA SL .20000E 02	R SL .80000E 01					AICRR .30685E-01	BICRR .30000E 01
CONTROL ISLING IDEPT RSASO ISTEADY NTROCR ISLTRM	0 RSASP 0 RSASR 1 NSTALL 1 NGREFF	0 0 0 1						

TABLE 17.- STATIC TRIM DATA

$V_{eq} = 80 \text{ knots, SAS on}$

15:12 FEB 11.183 CH-47B TPIN DATA POR NO. 57

	80.0 KT U .0 LBS PPM =	= 80.0 FT 24.1 H		0-FT U 0-FT U 		.f 14 pa	10, - 20	N ENE E	.0
THETA .29508E 01	PHI 24208E 00	₽S.[.030038 მ8	ຄ ເສດດລຸດຄຸດຄຸ	0 .0a0a0E 00	ត ព្រឹក្សាលាល្ក ជន	5100 .0730475=03	CHECO FE JOHN SHORE	001E3A PP .346056 03	
DELB PLT 20712E 01	DELS PLT .17539€ 00	DELP PLT .116636 00	#E:(9LT .46384€ 91		1925 TOT 1855 TOE	OF INT.	DERIC TOTAL		
THET0 FP .15768E 03	AICEP .70119E 00	BICFP 16290€-03	#HEMO RP .17149E 03°	[]] Swelding Dig	17 .10.5 # Me	1.75 .1310-05 -06	1 2 1 - 49% (5	5029FE B F 2018 15F - 400	
SIGMA FR .66979E-01	SIGMA PP .66979E-01	БНПМН €5 .140148 01		լամնա ԲԲ Հ(ՈՐԾՄ-ա1	CHIPACTO ELECTRICA	11 FF.	18_ 11 _107_k16 = 0	180 4 Ma. 1 113 90	
THRUST F .16412E 05	#08¶96L F .89011E 03	SIDE F .25637E 03	78คบบค.ศ .38757E กร	FF1E: FF1 14480(E (64	iline co	STATE FROM STATE	PEL In ER Ligewore HI	р бр 1646 г.Д. А.	
THRUST P .16985E 05	NOPMAL P .15188E 03	SIDE P .11877F AR	TOROUS P .ocasas es	L HUS FF .15-9AF 64	11 400 F 55 1676 F 507	**************************************	[F] T. FF .100783-01	4 p.e. 134 0.1 0.1 197	
OT FR .469066-82	0H FP .25868€-03	.732716-04	+00 FF .19779E -03	ล0 FF .วิศา236 สิโ	. n1 Fft .255,583551a31	14 F0 . 057-02E -01	0 5 57 FF 37576 - 65		
CT PP .48544E-03	ÜH PP .43407€+04	07 PF .33946E-04	000 PF .207106-03	на FF ,404170 из	61 FF. 11502E 300	면 #P . 1학자대 61	0 170 M F/H 1770 B/F 1870		
% FUSE 10147€ 04	SEINS 12388E 04	LANDA SL .00000F 00	∷ £ .⊧∂T .16504C ਸ4	1. P.EUT .10337E 04	11 M . 165 W/L (1)		### ##################################	PD FF # 10 - 74F - 91	
Y FUSE .14545E 01	∵ SLING .00000E 00	NU SE .00000E OO	7 F.RUI .25050£ 07	V Å.POT ∼.11574E A3	7 71 1177 9 E 60 (សារាក Book នេះបាន មានពិភិបា	E(1) F (1951) - 10 R/G/F (1951)	:H04 F0D	
Z FUSE .34819E 03	2 SLING .00000E 00	↑10 SL 10255E 02	2 F.F0⊺ 16350E 05	2 M.PUT 16054E 05	2.15 301545 (a)	#40.8 B0D .31:11E-01	ELIC FO (1911) COMPUSIE - 41	1800 BOD 101496 80	
L FUSE 39639E 03	L SLING 00 300000.	⊬ BAP SL .10135E 01	£ F.POT .10933E 04	1 Բ.ԲՄՄ 10534E ԹՎ	L 1.1. .753.055 - ph	LRSF 80D .240-25 yd	EHE4 F⊝J0 .15690E 04	ស្រុក ស្រែបប្រែញ្ញា ស្វាក្	
M FUSE 58710E 02	N SLING 00 300000.		M F.POT .32545£ 06	11 P.PUT 30537E 06	11 177 .10.455-25	11169 600 .39 ១៨៩ ខាង	NHSE BUI .1653DE OF	նել .Ծանոններ այդ	
N FUSE 24125E 03	N SLING .00000E 00		N F.ROT .26126E 05	8 8.807 25886E 85	# 122 +.441758 65	6188 800 (27:27:90 01	AIPP EUD .1:2796 ON	EFF .សមាជាជាមក ចូល	
BETA FS 12479E-01	8ETA SL .00000E 00	SL WGHT .75000€ 04	BETA FP 12532E-01	BETA PP 12464 8 -01		0188 801 .18708E 01	8188 800 .107055 U:	មុខម ភព្គម 3្សា	
ALPH FS 85271E 00	ALPH SL .26000E 01	J SL .77711E 04				HER BODG .89006E 03	HPP 10107 .151858 03		
VINTF .87480E 01	THETA SE .00000E 00	L SL .20000E 02			WIPP .00000E 00	.FF 80I0 338636E 83	YPF 8UF 11881E 03		
WIFS 89704E 01	SMA SL .20000E 02	P SL .80000E 0;					AICPR .30558E-01	BICPP .30000E 01	
	1 RSASP 1 1 MSTALL 1 1 MGREFF 0								

TABLE 18.- STATIC TRIM DATA

$V_{eq} = 100 \text{ knots, SAS off}$

CH-477 TR:11 10070 -908 No. 57

15:25 FEB	11, 187		CH-	-475 TF1.1 -566	1007A F.Ho. 507			
VTOT = 100 G.W. = 33000.0	a.o F7 U a LBrs PF11 ∈	= 100.6 rT 24.1 e	√ ± 5 09,7 67	0 - T 16 10	H + K.K.≯T JET,K [H. T. F.+	. 10 (7)	r = .0 10	Filth a .A
THETA .26354E 01	FHT - 360 900 - 00	P>1 .00₽00€ 60	: .მსტმმ£ დქ	i Lister i	Fr prodefile or	\$ 15 1.15 (1.15)	10 M TaH → F1 10 TVT E = 11	OME AA PP 22 A Ca €.
₽ELÐ PLT 64741E 00	₽ELS PLT .17457E 00	0818 F1 7 .815346-0.	5900 Ph.T . 1783 / 91			18.08 (0.3 18.11 (1.38)	[451] (F) (C)	to Inc.
THETO FP .16346E 02	AICER .35967E 00	81088 .148938 01	THETO F° . La 140 € 3•		100 100 100	1777 145 100 110 114	Thur Tables Fores	11, 818 £ 5 / F 11 1 1 5 £ / Oth
SIGMA F¤ 18-38788	31GNH PR .66979E-01	GANTHO AS 1941788 A.		Lissalah Lasta Sarsa		ini ab	रभाग छन्। १८४८, रहे - स्टब	1140,4 140. .11 1448 (78
THRUST F .16552E 05	NOPMAL F .73%17E ศิริ	9 10F F .1955 SE 907	100000E F .7.465.E 05	. 12V 04L 0		TO FIRST FROM	[67]] H F [447] [44]	1 (1) (1) (1)
THRUST P .16928E 05	HOP/AL F 53/64F 02	3.10F Pt 3.10F Pt	Theorie e In stiff our	1 HE 15 H 4		14441 77 - 71 - 71	18.10 PF .10 DEST 0.1	K F = 1 - profile (profile)
OT FP .47307E-03	04 F8 .30054E-83	(, FF) .5%693£-(4	OO FE . 15 MM HTS	40 0F - 40 660		pr 02: 150 (pr 03)	The section of the se	
ET PP .48381€-02	UH PP 15363F-04	0 (FF) 11553E-04	ा हो। हिस् ्राज्यक्याम् समञ्	000 44 . 41 Po + 0		To the Programme of the	F GF + FF ∀+/HF +2	
. FUSE +.15823E €4	\$0.105 1.53888 - 04	្រូក ប៉ុន្តែ ។ ។ ព្រះបានមេ	1 F.PUT 1 F.JE H.⊒	. 1			F:[F F !	101 FFF 130 - 32 - 01
i fusE - 19516E 01	7 St 196 90 Beneder	рт Ц , амерак , выста	11. FOT 1165 mark 1014	. • . € . F.; 6 8 (£ .)		F 1 4 1,429 - + + 40 F 1,400	(1) to the first of the first o	1.1.6 F. (1) 1. (+ 164 - 62)
Z FUSE .38101E 03	3 30 146 . ganaaa . ga	HU SE - 10055F (0)	2 8,801 1-07 05 45	7 F.F0 - 184 (A) (- 1 to forest	Elek (19 1454/946 (41	1 (100 H) (200 L) 1 (100 L) (100 L)
L FUSE 74346E 02	1 SLING 00 300000.	⊢ BAP SL .10135E 01	% 8,80T -,433119 PJ	1 A1.80 1 10 11 .	47 (416) (E) (F)	1009 E 0 1 1 1 E 0 4	UHRE 800 1570€ 64	54 F 1645, 355 - 55
M FUSE .33245E 04	11 SLING 80 360000.		11 F. FOT . 3.4-306 - 06	in F.F. F. s⊒req'E (មាសមា គ្ ពី ព្រះ ស្រាស់ជ	ក្រាម ក្រុង ១. ស្រីស្មាស់ សុវ	.ह.साथीची स्क्री : इ.स.
N FUSE 47013€ 03	2M1 J3 M 86 368868.		H F POT .13094E 95	14 F.FU 05/2021		-448 EGI 1.0 % 16 01	HIPP 800 -, FB 45E 00	FIED FIEDURAL
8ETA FS 13331E-01	BETA SU .000008 00	SL WGHT .750008 04	0EIH 0F 103040 01	88 1H F 1.301E-:		9 (FP EDI 177 9 E UT	6(18.8) (F.Hb) (10445) (F.Hb)	្គ្រាស់ ស្រុកស្រុក ស្រុក
ALPH ES .17311E 00	AK PH SL .36000E 01	J SE .77711E 64				#4 € 180407 1833481 63	HER BUILDING Common SE 400	
VINTF .71923E 01	THETA SL .00000E 00	U. BL .20000E 02			991:: 00 300000.	.63 801. .19563E 83		
WIFS 72641E 01	SMA SL .20000£ 02	R SL .80000E 01					AICPR 30846E 00	BICRR .44999E 01
CONTRO ISLING IDOPT RSASO ISTEADY NTROCR ISLITM	0 RSASP 0 RSASR 1 NSTALL 1 NGREFF	0 0 0 1						

TABLE 19.- STATIC TRIM DATA

$V_{eq} = 100 \text{ knots, SAS on}$

12:03 458	11.00			MUH 160	. 70				
VTOT = 10 G.W. = 37000.	0.0 FT U 0.185 PF4 =	÷ 1йй.й кТ 24.1 Н	- V + V9.7 FT	*.H • T H.	= 4.€ FT .80 To a = 1000 c c c	.00 [to 102	00n P	N EHE -	. 1
THE TA .26348E 01	₽HI -,26703E 00	FC 1 .ព្យម្មទទួក ជាព	ត្ ព្រឹស្សិសិសិសិសិសិសិ	erite diff (i)	F Jacquari (n.)	f +0 , 17 - 180 -07	000800 FF .34005E 03	जाह को इह 	
DELB PLT 19959E 01	DELS PLT .17454E 00	DEUR PUT .97523E-A3	DELC PLT .47819F 01	######################################		PERFORMANCE	EELU TOT .40040E H1	H [IT , 66 (1666) 66	
THETO FP .16346E 02	ค1889 .368068 80	810FP .14999E 01	THETO FR. .17144E คิริ	1831 .3400ฮก ฮร	177) 1881 (1881 - 1881)	1.77 .193899-06	112 .1490AF A°	্টি. চলিত চ . মুক্তিল চি	
51GMA FR .66979E-01	\$16MA PP .660798-01	6AMMA FS .14176€ 01		Lefthe FP 756466 01	LATTH PF 325050 01	भागा हाला इ.स.च्या १९११	19 FP .(3305[101	19-19-100 151-101-001	
THPUST F .16553E 05	NOPMAL F .73323E 03	SIDE F .19565E 03	70€0UE F .34636£ 05	1 FULE FEY 197864 FF4	M सम्ब क्र .297का (1	WINTERFE	DELIH FE .18771E-81	F - F , E40 - H - A.C	
THPUST P .16928E NS	NOFMAL P 5₹/3₹E 03	\$106 P .33883E 00	7000000 P1 .303380 00	। साह 40 .13/95£ छव	HI HOLDER HI NO COST OF T	17 (TIPHE 18 (TILLIA)	10E1 TH €€ ,10 % (£ +0)[F F9 .740 0.4. 07	
OT FR .47308E-03	OH FP .209566-03	CY FF .559198 04	00 FP .27300F:03	लाम सम् १९७५:३-१ मध्	#61 (Te) 130 1 (63 - 64)	1 1 UP .177 PF 01	OF SOLVER FOR		
OT PP .483826-02	0H PF 153576-04	0% F/P .113816-04	00 PF .26992E-03	न्य PP .11558€ में	н1 86 - ,60.(176 г.)	1 1 FF .941 5 5 601	(1) (4) (1) \$1\$ (1) (2) (3) (4) (1) (5)		
X FUSE 15823€ 04	31 54 ING 12388E 04	երիներ Տե . Ծոնգնել որ	11 £.PAT .18653F 04	P.E01 .17344E 04	. 14 % by - 1.1		FILE FIRE CONTRACTOR	ED FEE . DEC W - 01	
∀ FUSE 19508E 01	: 'SE ING :00:000E :00	NU 5. .00900E 00	7 €.60T .1958}E 93	- , 18/06 (F.) (E - 51.)	16 . (50.55) - 65	is 10 in Ed 10 The orași page	ETERMINE COMMON OF	1907 F1D . D = 0 L = 0.	
Z FUSE ,38102E 03	7 SUING .00000E 00	MU 5L ≯0255E 02	2 ស.គេ។ - គ្រង់គ្នាគ ភាគ	104.91. 36 300:31	0 Ht 9016/HE di	- 180 Met 1840 - 180 Met 1840 - 180 Met 180	E 10 F1 2000 -450000E 001	**************************************	
L FUSE 74345E 02	£ SLING .00000E 00) BHP SL .101356-01	U F.80T 42485E ∩3	1 6.401 11557E 03	Ա 1001 370566 04	1966 E00 1960 PR 04	LHBF: 801 13/93E 04	966 .000000	
M FUSE .23203E 04	00 300000.		M F.P0⊺ .32536€ 06	N P.POT 32768E 06	N 177 .956798 05	1949 E010 .097000 04	NHBE EOD 10001E OJ	06P ,aavang go	
N FUSE 47013E 03	N SLING .00 300000.		N F.POT .28099E 05	N P.EOT 27634E 05	# 107 .31515F=04	6188 BOD .203280 01	AIPP 801 68.74E กิซิ	PPF .granne pa	
BETA FS 12390E-01	BETA SE .00000E 00	SL UGHT .75000E 04	RETA FR 12453E-01	EETH PF 1238ศ€-01		0189 800 .1957-08 01	BIPE BOD .94181E BO	មាទីគ ព្រះមានមាន មួយ	
ALPH ÉS .17146E 00	HLPH 5L .26000€ 01	J SL .77711E 04				HATE BOIN 18819E 03	HER EUDON 5304JE HJ		
VINTF .71926E 01	THETA SL .00000E 00	L 9L .20000E 02			UIPF .00000E 00	. 19581€ 03	VPP BODY .39809E 02		
₩1FS 72644E 01	SMA SL .20000E 02	R SL .80000E 01					AICRR 30800E 00	BICRR .44999E 01	
CONTROL ISLING IDCPT RSASO ISTEADY NTROCR ISLTPM	1 PSASP 1 RSASP 1 NSTALL 1 NGREFF	9 1 1 1							

TABLE 20.- STATIC TRIM DATA

V_{eq} = 120 knots, SAS off

รพ-พาก ชายท บลังก คบท หอ. รัว

15:27 FEB 11.183

∨TOT ≈ 12 G.W. ≈ 33000.	0.0 FT U 0 LBS PPM =	= 130.3 FT 24.1 H	√ = = 39.0 FT	0 ×T U	4.7 7 .0 15 7 7 7	.√ (h ±:	700 = Jak I	o fair e
THETA .19843E 01	PHI -,33413E 00	PBI .00000F 00	P .ಪ್ರಚಿಕ್ಷ ಹಿಡ	5 . ARBABAK - 65	ह .स्टिक्टिट्र	F145 .17 x 17 x 31	(455) 55 1140:55 5.	हाराचा चना हर .⊱का के कि
DELB PLT 31433E 00	DELS Put .19336E 00	DELF Filt 107368 00	DELC PLT SISTRE AL	DECE TO: %14586 #0	na La Parenta Bas	to program	PEUC Y 1 SIEDUE WI	# - (e - t . 하다 : 10는 중:
THETO FP .17250E 02	AICPF .38537E-01	BIGER BRODGE GIL	THETO FR .17577F #₽	ा । स्थानीकार्यक्र	1 3 13 3 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(1) (기준 11개 및 11년	1.1 1449 - P	1.8483.8 .48 358.87
SIGMA FP .66979E-01	SIGNA P₽ .66079E-01	GANTA 85 .141868 83		180108 FF -: 12711 -01	Letter dist	in the second	MULTINE DOMESTIC	telator. National
THPUST F .16747E 05	MORNAL F .606408 03	1116 F .16415E 05	#000000	(1) (利)及 (F.F.) (1) [1] [1] (1] (1]	H to the second	11 . IF F#	TOLEN, CE	1 -1 1 0 -1 0
THPUST P .16934E 05	HOPMAL P 320568 03	SIDE € 303398 00	10et oë 31 . 5,459+1 - 145	l mila) £e . tan 14€ 04	11 av - 54 -1277 - 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 	101 to 35 .1070 % nt	F FT . No office
OT FP .47864E-03	UH FF .173316-03	Confidence Addates	(0 FF (학교학교 : 63	ered is lie 1. April 2018 - et d	114" tr. 11	.115 E +01	01 201 FF 1050 W. 180	
CT PP .48398E-02	CH PP 63039E-04	CY PF -1881396-05	£0 PF .31051E 03	ый РЕ .400%.0E 001	μ1 15 154e 3 × 1	1 1 FF 1 1 1 FF	0 का मही .327 मही मा	
∷ FUSE 32794E 04	.: SEING 12388E 04	LATDA S. .00000F NO	31 F.ROT .30700E 04	11 M. 201 140129 04	11 17 11 10 11 11 11 11 11 11 11 11 11 11 11 1		BD FFT 4035, E-60	ficite 167570-01
Y FUSE ∼.28270E 01	7 SLING 90 300000.	HU SL .0000 0E 00	7 F.AUT .16427E 03	/ F.FO⊺ .30794 E #2	1875 (Ac	н168 Е0Ф .37917E-Ф1	EINE FOD .YOUNGE OI	1HUS BOD 117.508 QC
Z FUSE .53248E 03	2 SLING 00 300000.	HU SL 10255€ 03	7 F.P0T 10636F 05	2 F.FUT 16877E 05	7216 H W.	ANCE 800 710 18 00	81 F 60D .60000E 01	THOR BUD 1767/E 02
L FUSE 11212E 03	241J2 J 80 300808.	1 BAF SL .10135E 01	L F.80T 1456∂E ∂4	L P.POT .15683E 04	L 100 142° 0 d N°	LMEN BOD . 1, 1968 04	ម្ត¥ម សម្រ .1891ម€ មុផ	ԲՐԲԻ . ԳՈՒՍՄՅE ՄԱ
M FUSE .36774E 04	M SLING .00000E 00		11 F.POT .32689E 06	M P.POT 33057E 06	11 1 7 - :550567 -05	::400 E00 .:/1901E 04	1866 F.D 19835E 04	.grades du
N FUSE 68976E 03	N SLING .00000E 00		N F.POT .33844E 05	H P.PO⊺ 33158E 05	4 ICT 16198E-04	HIFF 80b	AIPF BUI 13464E 81	ალის - ლისის დე
BETA FS 11575E-01	BETA SL .80000E 00	SL WGHT .75000£ 04	86TA FP 11656E-01	BETH RE 11575E-01		8188 80D .14433E 01	EIPF 8801 .73749E 800	HEP . BORROSE LOG
ALPH FS .25088E 00	ALPH SL .26000E 01	J SL .77711E 04				HFP BOD7 .60656€ 03	HPP 8017 228568 03	
VINTF .61096E 01	THETA SL .00000E 00	և Տև .20000E 02			WIPF .00000E 00	YER BODY 16427E 03		
WIFS 61347E 01	SMA SL .20000E 02	R SL .80000E 01					A10PF 71192E 00	810PP .59998E 01
CONTPOL ISL ING IDEPT RSASO ISTEADY NTROCR ISLTRM	0 RSASP (0 RSASR (1 NSTALL 1 NGREFF (8 9 3 1						

TABLE 21.- STATIC TRIM DATA

$V_{eq} = 120 \text{ knots, SAS on}$

15:08 FEB 11.183 CH-47B T. MI SATA FUN NO. 57

VTOT = 12 G.W. = 33000.	0.0 + T U 0 L83 PPH =	= 130.1 МТ 34.1 н	V = ≃ 39.8 f1	8 F° U 1 TENP ≈ 188	# 4,7 % f	ja na pi	TG = .6 #	i PHF + .a
7∺ETA .19833E 01	PHI 33520E 00	F5: .សូមហេសុសុគ ស្វ	ខ .បី⊹សស់កាំF កស៊	ក ភាព អ្នកសេវាស	· Kiring the second	r - 7 , 18, 196 m.	701E 2014 P	មេក្រឡាក្ខាទ ព្រះស្រុក ភូពព្រះ
DEL8 PLT 19628E 01	DELS PLT .19322E 00	DELP F⊾T 19629E 00	IELO PLT ,5158 C. D1	DELB 111 .014378 40	14.1 (19.1) 14.2 (19.1)	$= \frac{\partial q(x)}{\partial x} = \frac{\nabla q(x)}{\partial x}$	100 mm	er for t Decade to the
THETO FP .172516 03	AICER .26623E-01	BIOFE - ទីសៅស៊ីបម ហ៊ុ!	16676 FP. 176838 đạ	1 11 , saminer ng		17. . 1 (a. 10. a.)	1.1	0.8888 F .4004 U.C
SIGNA FR .66979E-01	91GNA PP .669798-01	ลัคมกล คร .141858 สิน		i.antha 79 477510-01	1 (27) 3 (4) 3 (4)	en en er	ML FF Sp ≦ SE	MOCE NO. .161731 NO
THPUST F .16748E 05	MORNAL F .60655F 03	SIDE F .163658 63	70⊬30€ f .53586£ 65	1 HUB FF 11175E 84	right is a second	The state of the	DEL 10 4 F . 10 70 F E 001	in Ethinical Control
THRUST R .16934E 05	40001AL P 22047E 03	5100 P 700010 00	ព្រះមានឡា វ . ឌ.១១៤) - ភាក្	1 1646: 246 1640: 441	-11 of 6 4 F	A CIPLA	[11] To FF .107700[-31]	1 -4 . 5.1 - 1 - 4,
CT FP .478676-00	UH €€ .17350£-03	01. FF .46772E-04	7 (1 4 k) ≈1 (4) - i 3	140 FF . s. Casa (E+11)	1000	. 1 1 1 F	0 (p 1 f f) 10 (p 1 f f)	
OT RR .48399E-00	CH PF: 63012E-04	0 (PF) - (3)*173E-05	(10 FF 7 H)(4+E+1) 3	160 FF 146(3)46 K1	**************************************		10 (1975 - F4) 10 (1975 - F4)	
X FUSE 22795E 04	00 SEING 12388E 04	եศ∩ԾԹ ՏԼ .ԾԾԾԾԾ մո	00 5.89T .282898 84	ិក្រុមប្រ គ្រោះបានមក្សាជា	11 *1 . 1 [] () ()		Fato Flet Hasting Elling	FTC FEET .160 % # - 81
7 FUSE 28259E 01	1 SL IHG .00000E 00	10 5L , 90880E - 00	7 F.EUT 163775 83	7 8.801 .11156F 00	77 (I 107473 (F	(1.3 End) (2.3 Ed) (2.1	fileFilado .Somework wij	1404 E00 117,515 W.
Z FUSE .53252E 03	2 SLING .00000E 00	ีกับ SL 1ก255€ กุว	2 F.PGT 16637E 85	.1 8.801 16878E 05	- F. H	1 10 F (E0.10 2	filifi foli	11000 Exil 112630E M2
L FUSE 11212E 03	L SLING .00000E 00	E BAR SL .10135E 01	L F.ROT +.14637E 8M	L P.POT .15055E 04	[][]] 09111F -:	: HLC Lub -: (11.5 E 124	1.106)F1 E0110 . 1017/201F - 414	. सम्बद्धाः इत्यासम्बद्धाः
M FUSE .36715E 04	## SLING 80 300008.		109.331 30 316355.	N F.ROT 53057F 86	16 (46) 481461 (60)	1948 F. (F.) (D.) (1949), E. (H.)	1996 E (10 - 1997 BHE 714	្រាក់ អ៊ី។ ស្រាប់ «ហេស៊ី» ពីព្រឹ
N FUSE -,68976E 03	N SEING 00 30000 0 .		№ F.ROI .33830L 05	H P.POI -:37169E 05	# 177 1680 \$2 46 4	H16F 800 (14742F 01	наямя вол 1946ам от	៩៩ ៤ - ស្គេចកម្សាច្
BETA FS +.11637E-01	BETA SL .00000E A0	SE WGHT .7500AE A4	BEIH FF 11717E-01	#ETA F# 1163#E-01		1 11 F BOD .1- 0 E 01	8189 801 .736158 00	00% .0000000
ALPH FS .24895E 00	ALPH SL .26000E 01	J SL .77711E 04				HNP Bពីសា .ស្ពឺពីក្រា សិនិ	HER BOLD COSTATE OF	
VINTF .61099E 01	THETA SL .00000E 00	L SL .20000E 03			Wiff .00 300000	WER EDDY .1637/E 03		
WIFS 61351E 01	SMA SL .20000E 02	R SL .80000E 01					AICRR 71331E 00	BICRR .59998E 01
ISLING IDEPT	I PSASP I RSASR I NSTALL I NGREFF	Ø 1 1 1						

TABLE 22.- STATIC TRIM DATA

$V_{eq} = 130 \text{ knots, SAS off}$

CH-478 TRIM DGT/d FUN DG. 53 15:01 FEB 11.183 VTOT = 130.0 · F # H.O.ET U. # H.O.ET 89.6 FT UPPR N (280.0 E) (200.0 = 170.0 PT 34,1 ⊨ G.W. = 33000.0 LB5 PPM = .2 Ed Color = 1.0 IN EABL € FS1 F _-13010=1_r-1 ring type I PP .74947E 00 -.38333E 00 .0H0000F 00 .2009-01-08 , 2005doi i fa .272002-P2 Listinger R. DELB FUT DELS FUT CFLL FLT 1813: 100 14 SE 194 IMERICATION CONTRACTOR 21.1.1€ .003838 00 ្នាធានាក្រាស់ -.23489E 00 4.174,034 (6) -. 1 Leading con-184 × 03871. - 1301 AICER THE TO EP STOFF THE TO \$ 6. DUFFES F JUDITE OU .178418 03 -.100338E sid . 10 . Benchen? 11 mg (16) . Balonnaie (41 _ 140011E -d% 14996 35 SIGNA RE SIGMA FR GETTIE F 111 1 -1 311-11-1-ATRIBA Literatura Total Co. 5.4 No. 10 co. 10 .66979E 01 , e.e. $\mathcal{C}^{\alpha_1} \in \mathbb{R}_+$. 140 14E +01 100-110-19 21.5 × 1.50° MORTHL F THEUST E 111 46 3.70 OOF 17 edical Landaga ari [d] [1 : 1] 780136 03 , 18969F (15 1. 54 do. 1. 40.1 5.10F S THEUGH P HOPTHE R 31 810 3 % a alban ka Lebebak ire -.5045IE WC .171498 05 . 6. 66 th 30 israi a. 11851"T HT CH FF ET FE 0.00 HALLEY THE MEDICAL 10.12 1-17-07-4-4 .48313E-03 .22299E-03 .493566 04 1405 at 12 - P. 1 . W.1.14 (F. 105) W EE CT PP CH PE 0.346 oth Rh B1 FE THE JOINT FOR .49013E-00 -.149916-94 - 13490E-14 34 -4 E - 43 1.50 St 31 $1/40^{\circ}40^{\circ}41 + 414$. . . 1 7 200 11 50 100 C.FJT Z FUSE TERLEGIT 1.61706. 03 BI FFF EIL FFF -.12388E 04 -.26853E 04 .baabaa an . 1558 TE 04 LICARNE DA -.63546E 8J .1000 6E 01 Y SULING Y FUSE NU SE . 17273E 03 y ne Little tilk er 1.45 B40 -.15 14, 800 E-D F FILE That But . ооноов не .encoar an .110161 00 . 478 BE 60 THE HILL HIL .130 HE an T 08 146 C FUSE 2 H -130190a i BUCK FOR THOS BUD .0000000 00 -. THE 05 .88877E 03 -.10395E 63 -. 16793F C5 ..ຫ ເຕີຣ ເໍື່ອ .10150E 0: .60000E 01 I FILSE L SLING F EHR OL F. Hot THER BUT 1111 -.11295E 03 .000000E 00 .101355 01 -11905703 (14 . 11 date 44 . 15000E No. , maanag i gag II FUSE 11 SE 146 10.10T 11 9, 6.11 The transfer for THEF OF E .38183E 03 .000000 00 1 1 1 E + 16 . 1 dr 64 21,000,4 BC 50 വണ്ടെ N FUSE NI SEING H + .751T . 15,63F +15 16 (1.51) 130 818 (6.4) HIPP BUD 1. 77.1 de 105 -.64037E 03 .0000001 00 Carrier in 1.01 Oct. (6) 2003/51/25 1991 BETA ES BETHI SE SL 1,6* LETHIER 34 (4.49) minn sor 14.5 -.501458-00 . ไรอักกับ (64) Participants .0000007 00 CONTRACTE HIS .141 -1E ed $1.09\,\mathrm{Li}_{20}\,\mathrm{T} \sim 10$. F - 11 8 . - 10 - 200 ALPH FO BLEH SI HER BUILT HEF FOR -.23805E 00 107711E 04 .26000F 01 mada es - 15 140 £ 17. VINTE THE TAILST UD: SEE BODG APP BLIG .56652E 01 .0000008 00 .2000006 03 .172768 83 .0000002 00 -.47904E 00 WIFS SMA SI ATCRE ELIPP -.57043E 01 .20000E 02 .80000E 01 -.90473E 00 .59999E 01 CONTROL FLAGS SET UP ISLING 0 IECSCON D PSASP RSASO RSASR

26

ISTEADY

NTROCR 1 ISLTRH 1 NSTALL 1 NGREFF 0

TABLE 23.- STATIC TRIM DATA

$V_{eq} = 130 \text{ knots, SAS on}$

15:04 FEB 11.133 CP-4FE TRIM DATA FUN 10. 57

VTOT = 13 G.W. = 33000.	0.0 FF U 0 L85 PPM =	- 130.7 FT 24.1 - Н		=.0° KT W THEFT = 0.00		ા કાક છે.	775 - .6 II	y FHP = .0
THETA .74433E 00	₽ HI ∼.38364 E 0 0	851 .00 300000	P .00 300000	ក .សភាបាន គឺឆ្	្ត ព្រះបញ្ជាក់ សេ	F40 .25701F402	OMEGA FE waste es	COMPILER FIF
DELB PUT 20335E 01	0€15 PLT .20988 € 00	DELF FLT 15350F 00	№.LF 2LT .545000 01	DELB 10: 73500E We	001 / 30T .209506 51	of:F TOT	[4] [1] [4] [4] [4] [4]	स (० म . सम्बद्धाः वस
THETO FP .17844E 02	AICER 10005F 00	©ICFF .7000∂E 01	THETO 뭐든 .101378 여성	TOTAL STATES.	PMM Determina	1, 17 110 - 40 - 40	[1111] 114[34[4]E - (6)	Total Programs
SIGN⊖ FR .66979E-01	516MA PP .869796-41	GAFREN ES .14813€ 03		ний ге *-11867 п	1 i 104 PP - 304 Baber 1	11 - 175 176 - 125 (E. 124)	71 1 FF 21 7 1F 10	Clearst for.
THPUSI F .16871E 05	10PMAL F .78865E 83	510€ e .12296€ 03	fun (00) f . 344447 - 05	TO AREA TE	12 F - 4 W 12 F - 1 F - 1 F	MOTHER FE	00.0 M/s 0 er 100/7/08 - 601	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
THRUST P .17151E 05	NORMAL P 53087€ 03	511F F 478948 03	10/8/00/3 F	स्थाता । इ.स. १५८ म्या	11 dec 96 -111 de 12	TERE	DEL 7.6 FB . 10 3.0 F P1	1
OT FP .48220E-03	## FF ,22312E-03	07 FF .49432E-해4	00 F8 .37918F-83	κθ FF .39538E HI	61 F1 .2005## (61	-1 9F -1 0 01	no faint file Takklife (M	
OT PP .49019E-03	OH PP 14887E-04	ี่ CY PF 13632F ผิ4	00 MP .34659F -03	но РР .40-Ю(18-01	01 PF: -1511 Web 100	: PF .65 - 21 (6)	in body en . Ne sine land	
X FUSE 36854E 04	StinG 12388F 04	LANDA SL AN 386000.	1. F.FOT .18683E 04	11 F.F01 .1248 W 04	11.44 14367 M. Am		EK F#8 488550E U.	00 SEE .1*** PE P1
Y FUSE .10949E 00	Y SLING .00000F 00	MU SL .00000£ 00	V F.F0⊺ .12303E 03	7 8.801 .47690E 82	7 H .215-27 00	1436 B (800) 1166 B (80)	្រាស្ត្រ .ខេត្តស្ត្រាម ខេត្ត	1808 800 180848 00
Z FUSE .89068E 03	2 SEING 00 300000.	NO 90 10355€ 02	2 F.F0T 10780E 05	7 P.P01 17105E 95		HIP END	8168 601 .8800308 01	1808 BOD .181338 D.
L FUSE 11295E 03	L SLING .00000E 00	F BAF SL .101356 01	L F.PAT 3ART4E 04	t P.FOT .71489E 04	L INT 43558E OF	1.158F 1901 (3501-148 1904	EMER EUD LUTHIOPE ME	FFF .004000 00
M FUSE .25601E 03	11 SLING 80 388988.		11 F.POT .331805 PS	11 F.FOT 33. L4E .06	# 157 - 25617E 74	1987 BOD 1981 WE 64	11888 5 (B 11963E (P4	µe្គ .ស៊ូសូសស៊ូក្! ស៊ូស
N FUSE 63670E 03	N SLING .00000E 00		N F.FOT .378636 05	N F.FO7 .37./39E 05	10 IEEE 410 Mar 04	н18 е 1900 2000 част 11	#189 800 *:31754E 807	NAPINGE ON
BETA FS 49841E-02	BETA SL .00000E 00	SL WGHT .75000E 04	88 TA FP 50358E-02	EETH PP .430176-03		1 HF 800 14151 01	BIES FOI .EaclinE (m)	មាទទ ភាពឃាំកា{ ស៊ូល
ALPH F5 74341E 00	ALPH SL .36000E 01	J SE .77711E 04				HFY 8057 .7800-38 93	서면(* 1901) (5강한8 전 - 1931	
VINTF	THETA SL	Ł SL			MIFF	vice barvi	YPP BOJO	
.56659E 01	.00000E 00	.20000E 02			.000005 63		47699E 03	
WIFS 57051E 01		₽ SL .80000E 01					AJCPF 90457E 00	810₽₽ .59999E 01
CONTROI ISLING IDCPT RSASO ISTEADY NTROCR ISLTRM	1 PSASP 1 RSASP 1 NSTALL 1 NGPEFF 0	1 1 1						

TABLE 24.- STATIC TRIM DATA

$V_{eq} = 0.1 \text{ knot, SAS on}$ $\Delta X_{c.g.} = 21 \text{ in.}$

CH-478 TRIN DATA PUN NO. 57

15:56 FEB 11.183

13.36 FEB	11. 05								
VTOT = G.W. = 33000.	.1 kT = U 0 LBS PPM =	= .1 FT 24.1 Н	w . = 96.3 FT	0 kT tf 7878 6 298	៖ .೯೯೯ ភ្លៃ (៣ ೯೬೪ -	. m - 19 - 1929	15in ft	t trit. =	.ค
THETA .67078E 01	PHI 42129E 00	PSI .000000E 00	e .geaneg ac	0 .∵3820F 00	E Later Market	ere Diskut er oo	00504 FF .149551 7	UNIF WY PF 2. PRIS BU	
DELB PLT .87360E 00	DELS PET .25159E 00	DELR F.T 23833E 00	DELT FLT .5/5640 P.C	DELB TOT LUCKEDE OF	1400 - 1000 1204 - 1000	1913 FAT 2 74 FD	1600 1 m	+1 ± 1 ± Γ +1 ± 1 ± Γ	
THETO FP .19094E 02	AICEP -,27903E 00	810FP 14998E 01	THE TO PP .10020C 00.	1111 1344-14104 - 615	.26 ⁽¹⁾ 4 (2)	. ទោក ២ ភាគ	1 1 1 19-11 E - 175	1,0985 c 10 386 ci.	
SIGNA FP .66979E-01	SIGMA PP .66979E-01	GACITIA 1819 . 30/36/3E -0.3		() 이 1 전 전 1 () () () () () () () () () () () () ()	PARTICIPA COMPANIES	1.4 1.5 ± 4.3 ± 1.2 ± 1.	Tilbrandi 2004 Um Bur	1467년 제6. - 반성44년 184	
THPUST F .18358E 05	MORMAL F .48330E 03	\$108 F 891366 vo	100000 F .487778 +65	1 1838 FR 456716 88	1 (e) (f) 17 (5) (c)	11 TIP FP 11 11 07	19E.1 11F .1105 (€ 21)	1 FP .514516 W7	
THPUST P .15227E 05	HOPDAL P 39713E 03	91DE P +.33939F 03	10800E F .30040E 001	는 역(원) F위 1815 (F) 6대	14 die - de 14 die - de	の1 6年 年 1720年1月日 - 6月	15. THE RM . 10 to 2 (c)	៖ pe .94 ≈41% ជា	
OT FR .53465E-03	OH EP .13781E-03	€ - £8 25474E 04	មួយ FP .4551-46 ម3	HO FE .1 +050E 01	1.1 T. 1.1 T. J.) - ក្ត បាក់ ប៉ុក្សា	10 1 10 1 W		
6T PR ,43518E-02	CH PP 11349E-03	0. PP +.941366-04	00 FF .3.1908-415	न्ति हिंह .4∏128€ मा	arf 37 * 14.64 9 - *1	1.1 5 0 - 77 5E 01	क्षात्रक स्थ १९४१म्स स्थ		
X FUSE 25691E 00	00 SEIMG 12388E 04	ԼԲՈՒԲ ՏԼ .00 300000.	00 F.POT .33955E 04	11 F.FOT 14536£ 64	. An in the last of the		6E FF4 .35012E 00	EID FFF , BITHELIE DIT	
Y FUSE .21749E 00	7 ScinG .000000	NU SL .00000F 00	. F.FOT 88721E 03	7 P.FuT .329058 03	7 1. .234710 60	0005 EUD 	6103 1000 150006 01	1809 B10 19094E 00	
Z FUSE .60328E 03	Z SLING .00000E 00	MU SL 10255E 03	Z F.ROT 18207E 05	2 P.POT 15162E 05	ე // 3199u8 მე	+108 BOD 1783E 01	BICE ROD .15000E 01	THOS BOD .120020E 02	
L FUSE .23013E 00	L SLING .00000E 00	⊦ BAR SL .10135E 01	L F.ROT 05383E 04	L P.ROT .85344E 04	10060f -03	UHBF BOD 40481E 03		949 10 300000.	
M FUSE .19341E 04	M SLING .00000E 00		## F.ROT .32430E 06	N P.ROT 30636E 06	11 IYA 345688 47	THEF BOD 20%5E 04	1946 EUD 318946 U4	069 08000000	
N FUSE 91704E 00	N SLING .00000E 00		N F.POT .45468E 05	N P.ROI 45476E 05	4 188 443508-84	нийй ВОГ 15047E Ф1	#1FF 80D 14937E 01	PPP .000000 00	
BETA FS 49548E-01	8ETA SL .00000E 00	SL WGHT .75000E 04	BETA FR 49348E-01	BETA PP 49364E-01		8188 80D 223138 00	81FF 80F 12401E 01	UPP .000000	
ALPH FS 89692E 02	ALPH SL .26000E 01	J St .77711E 04				HFF 80107 .482.785 83	HFF 8057 39684F 03		
VINTF .42252E 02	THETA SL .00000E 00	L St .20000E 02			W1RP .00000E 80	YFP BODY 88721E 02			
WIFS 31295E 02	SMA SL .20000E 02	R SL .80000E 01					AICRR 12401E 01	BICRR .14989E 01	
CONTRO 15L ING 1DCPT RSASO 1STEADY NTROCR 1SL TRM	I RSASP I RSASR I NSTALL I NGREFF	Ø 1 1 1							

TABLE 25.- STATIC TRIM DATA

V_{eq} = 80 knots, SAS on $\Delta X_{c.g.}$ = 21 in.

EH−478 TEIN BATA PUR NO. 57

15:55 FEB 11.183

VTOT = 8 6.W. = 33000.	0.0 FT U 0 LBS PPM =	= 80.6 rT 34.1 H		÷.€ PT Gar Colombia Sast		ile in D	006e II	N FME .M
THE TA .30320E 01	PHI 23296E 00	PSI .00000E 00	P .000001 ap	i , ignagge van	g Jashanhar da t	F-10 1007 F-00	ាក្រភព ៖ F។ ឯមេក សែក	TUR LER
DELB PoT 14304E 01	DEUS PUT 13673E 00	DENE 657 .376575-01	DEFE FLT , dencinF of	THERE THE COURT HE	DEED TOTAL	. (4 Tat . (4 1 % Tat	Ideal Contraction	6 1 T 100 0 C OU
THETO PP .16236E 03	AICER .376228-00	EICFF 8707.26-044	THE TO PE . 1651:0 PC.	(** .≂4666€ 365	1887 1887	1777 1777 - 1887	1.17 1.149 del 10.09	1.1410 F 140 - P.7
SIGNA FP .66979E-01	51GMA PP .66979E-01	GANNA ES .139588 01		Lottle F# 32761F-01	Leither et a	OF FE Committee Comm	700 5 P . 1971 18 0 0	This 90 has. .1 11114 - 001
THPUST F .17916E 05	NÖFHAL F .1039∣E 04	51D€ F .18833€ 03	flandsE f , in this fire	. HUBLEF Tim.E. as I	Hosse de Alberta	. In the	Tally one folk country Tally	F 14 , 14 - 16 - 601
THRUST P .15504E 09	HOPMAL P .96905E 02	\$10€ P .56383€ OJ	1900 - 6 - 60 	1 AUE 195 112-400-51	11 18 1 F	To Till 6.45 History Hall	(1 4 5 14 .10° 48° 91	\$ 1.8 . 8d 0.89 18;
CT FR .51204E-03	CH FR .39698E-03	เดิร FF .53094E-ผิน	00 FF 21090E-03	нО FF .47074E ОТ	project of the second	1.1 PM 1547 4 01	$\frac{1}{10000000000000000000000000000000000$	
CT PP .443106-02	OH PP .27696F-04	C% PP .168988-84	00 PP .51 \$394 415	40 분원 .경임인공하 141	44 SE	EST ME Distribution	To the will be the control of the co	
X FUSE ∼.10151E 04	# ScING 12388E 04	երինի Չե .0000ՄE ՕԴ	10.80T 17784E 04	::P:POT :98:4752	1911 1900/31 (1)		FOR FER 1. SUBSECTION	1015 FEB 11705 9 - 011
Y FUSE .14534E 01	7 SUING .00000E NO	NU SE .000000 00	7 €.₽0T .160470 μ3	- 96,69E 0.	77 77 , 1 76 708 (66)	1867 1900 1867 190 000	E 10 F (5001)	1400 - 100 0 216 - 24 - 410
Z FUSE .37688E 03	Z SLING .00000E 00	MU SL 10255E 02	2 F.FOT 178588 05	.1 P.FUT 15 W3E 05	2 H = .321071 0.	140.7 00	€10 F - 6001 . 7000006 - 011	1179 E.F. 10 (1 e. 7)
և FUSE 39642E 02	L SLING 00 300000.	⊦ 8AF 9L .10135E 01	⊾ F.FO⊺ .37390€ 03	L P.POT .11435E 02	L 1001 .38777F + 0	0000 800 .211075 04	LHER END .11697€ Mil	PEF _Messon(Country)
M FUSE .19761E 03	N SEING .000000E 00		N F.POT .33459E 06	IL P. PUI 33478E 06	M 1557 .3685. F e 1	11388 814 .450958 04	OHER BOD -,101215 93	មេក្តីក ស្រីក្រោយម៉ោស្រី
N FUSE 22624E 03	N SLING .00000E 00		N F.FOT .35733E 05	n 6.90⊺ 35582E-05	H 100 4466980-003	01F9 80D .294018 01	61FF EDI 69650E-01	ԲԲԲ . ԱԾԿՄԾԵՐ ԹԹ
BETA FS 12339E-01	DETA SL .00000E 00	SL WGHT .75000E 04	887∺ FP 123896∸01	88TA PP 123248-01		8156 801 .144316 01	81PF 800 .798@4E 00	្រាស់ ស្រាស់ ខេត្ត
ALPH F5 +.11343E 01	ALPH SL .26000E 01	J SL .77711E 04				HER BODG .10391E 04	HER BODG .96893E 4.1	
VINTF .95770E 01	THETA SL .00000E 00	L SL .20000E 02			WIPF .00000E 00	7FF 80In 18845E 03	7PP 80[77 .5631 0 E 02	
WIFS 98254E 01	SMA SL .20000E 02	₽ SL .80000E 01					AICRR 14672E 00	BICPR .30000E 01
ISLING	1 PSASP 1 PSASP 1 NSTALL 1 NGPEFF (

TABLE 26.- STATIC TRIM DATA

$V_{eq} = 80 \text{ knots, SAS on}$ $\dot{h} = +1000 \text{ ft/min}$

CH-478 TRIM DATA PUN NO. 57

15:51 FEB 11.183

VTDT = 80 G.W. ≈ 33000.0	0.0 KT U 5 LBS PPM =	= 79.9 LT 24.1 H			= -6.4 °T 0 [0] 0000 =	.0 IN 53	€6 = .0 IN	1 PHP = .0
THETA .25404E 01	PHI 34438E ଅଟ	PSI .00000E 00	P .000000 AA	. 100 JUNE 190	F . ტერიისი — იმ	#300 .005.0038-00	្យ1834 (ក .240354 ក.	[전투][# FP 네.(설. 전.
DELB PLT 20303E 01	DELS PLT .23328E 00	FELF PLT .T:479E-00	DELC PL* .578445E 811	TELE TUT .:Am.9F 01	150 1 T .157 95 (DEER SOT . PROTEER.	1684 1 (177 1673 46 E (61	10 [0 E 110 [0] 00
THETO FR .17944E 02	AICER .47762E 00	EICFF .28426€ 07	THE TO FR.	1 11 p.pq - 65	TO Enter the	1.77	111	i Promise Table of
816HA FR .66979E-01	316MA PR .66979E-01	Ger#10 85 .157018 61		Lad Republic Espaining 1911	palities (F) ecological	(8) (P (1) (3)	131 FF:	144-16-88 . 178-8-8-8
THRUST F .16969E 05	HOFMAL F .10678E 04	5156 B .238944 m3	10869F F .3 4 d.y - 63	a as us the Little E ⁿ a 194	1 M 170 141 - 164	- 11F FF	18 4 Feb 1 5 14 7 Sec. 199	1 (1) 1 (1) (3) (4)
THPUST P .17311E 05	NOPMAL F 80 388888.	5100 F .764046 MJ	TORCOL FO FOUNDL 95	1 15 (F) File (10 - 50 d) 10 1	18 July 1 (18)	No. CIFES Logic Committee	16 (64 65) (10 : 46 - 61	joka Postova
01 FP .48500E 03	OH F편 . 30517E-03	0: FF .8៧3938-ជាជ	00 FP .500 48 03	160 FF 183, 73E 491	park distriction of the second	1.1.4 P . 15 10.3, 10.1	en par de la companya	
ET FP .49198€-83	ียีฟ PP .85378E-ค4	0: PP .216426-00	ng PP .anubul-613	- (4) - με: . ΕπιΣεβΕ - 19.1	61 (45) 1602 (43) (47)	#1 ## . 51 orb Fin	TO THE SERVICE CONTRACT	
X FU3E +.10398E 04	11 SL1MG 12588E 04	LHC06 9_ .000008 00	ে গ.ছπ∓ .15শংড্ৰ গোঞ	11 P.FU1 .95.91€ 03	.14273E 000		60 FFF 15690E-01	Ръ Г4+ .1/349#F #1
7 FUSE 57302E 01	Դ SLING .000000E 00	19 5 <u>.</u> 00 3 00000.	7 F.907 .28041E 03	77 F1.F07 769868 61	116.5.11 (1.1) 1.11	600 F F 15 , 47 No. 2 act	B(D(F H00]) 10(4.00E 0.4	1808 원.) 12344만 년
Z FUSE .11504E 04	Z SLING .00000E 00	140 St 10255E 02	2 F.PCT 169046 05	0 P.PO⊺ 10190€ 05	2.10 S≥ 164 B 701	4108 BOT +1759B UU	8109 100 .R00008 01	7808 F (1) 190758 P.
t FUSE 49953E 02	L SLING .00000E 00	F BAP SL .10135E 01	L F.POT 80016E 93	9, F.POT .85/3081 U.S	.973878-04	* OPE EUL - 221126 84	LHRH 1 (15) 19구국원(전 17종	FFF , whichigh that
M FUSE 11117E 05	11 SLING 00 300000.		M F.ROT 33858E 06	## R.POT ™7438 06	tripro.	1848년 등이다. , 427년 4월 374	MH(-P) 4 (02) 1980/90 E 444	HEF INCOMES ON
N FUSE .22843E 03	N SEING 00 300000.		N F.POT .38176E 05	4 F.FUT 33438E 05	1 17. - 174640 di ²	yakira kunja Virilizuan 191	94]#PF (PO)[94]#PF (PO)[94]#PF (PO)	¥1F1F , មានការីមេន្តី ស្រាំ
BETA FS .37463E-01	BETA SL .00000F 00	SL 06HT .75000€ 04	BETA FP .20161€-01	BETH PP 17665E-011		#718⊨ #00D 1500 of #11	F:14:F: (101) . F::14:F:1E - 201	THE P TO SERVE HER
ALPH FS 84193E 01	HLPH St .26000E 01	J 9L .77711E ⊕4				H¤⊖ B∩[.180573E 0⊒	ΗΡΑΝ ΕΩΠ : 984.Έ (13	
VINTF .90566E 01	THETA SL .00000E 00	t St . 20000E 02			9910 96 36866 3.	788 801 1 .28041E 03		
₩IFS 92011E 01	SMA SL .20000E 02	R SL .80000E 01					AICPR 41207E 00	BICPR .30002E 0 1
	1 RSASR 1 NSTALL 1 NGREFF	Ø 1 1 1						

TABLE 27.- STATIC TRIM DATA

 V_{eq} = 80 knots, SAS on \dot{h} = -1000 ft/min

CH-478 TRIM DATA RUN NO. 57

15:53 FEB 11.'83

∨TOT = 8 G.W. = 33000.		= 78.7 KT 24.1 H			= 14.8 FT 3.8 FG 106 =	.e in re	.οο.i	N PHP = .F
THETA	PHI	189	e	0	P	នមាត	innend er	OUBSH PP
.35195E 01	86624E-01	00 300000.	.000000 คำ	.00 306604	.000664 00	នៅទី៧១-គឺកសិវ	.:4005e in.	.D.C.C.D.D.C.
DELB PLT 19523E 01	⊅ELS PL7 .12547E 00	มียับคำ คินไ . 16644E บิติ	DELE FET .3/H4ME OF	1818 TOT 100408 01	15FC3 for 13547+ 00	THER THAT	PELL IL.	0 for b 11-5 c.
THET0 FP	AICEP	BICER	THEFO PR	១១១	Tableson be	1777	1101] . F₽F ← F
.13583E 02	.76309E 00	22128F-63	.14010F 00	នេះមេខ មាន		1745 - HE - HE	1101 (110	
51GMA FF .66979E-01	316MA PP .669798-01	GALEMA 60 .193368 0:		ខ្មៅឃុំមេ FF មទាសង់ ÷ថ្		THE FIRE	ngulap Lipinak kumu	Helik tal. 11954 - 00
THRUST F	NORMAL E	51DE 4	1080016 F	HUB FR	filter in	SOUTH FREE	14 (10 ° 1)	1 ();
.15838E 05	.717576 03	.10253E 604	.963216 04	417년 84	Partia		. 100° 0 d = 1	,34 () () ();
THPUSE P .16841E 05	H0F190L F 21849€ 02	SIDE F INTSOF OF	700-0018 F . 1500-71 - 25	T HUE PP .1865781 FT	FI di FF	1 11 FE 1 2 4 10 0 4	[6] 1.5 1.6	d FAN Leaf thing FANC
OT FR	CH FP	07 FP	70 FF	+00 FP	#41 475	1.1 FP	1 1, 15 4 P	
.45366E-03	.20508€-N3	.5514ME-0∹	.0176 RF -84	,30 200€ 01	P17578 - 001	14 4E 411	106 E/17 4 F	
OT RR	OH PP	0 ⊬ PF	00 PP	H0 PF	#1 PF	#1 FP	O GHV #F	
.48131E-02	62444€+85	.29294E-04	.1√883€-83	. <5 1978 01	리(일라는 18	.12" SE H1	. Parke = Po	
X FUSE	% SLIMG	LAMDA SL	00 F.FOT	8 P.POT	1. m		FINEER	EID FFF
9 3 967E 03	12388E 04	.00000E 00	176901 04	.11966 04	19. maj (51		MERCENTI	. Lab 31E 31
Y FUSE	7 SLING	NU SL	. F.FGT	T P.PO1	ा ।	нПЕ БЛЕ	F10F 10 F	1969 E (D)
~.41025E 02	80 3000 00.	.00000E 00	.19313E 03	10250E 03	, 4940, 1 = 01	.7690.00	-10507716 06	.186971 00
Z FUSE	2 SEING	MU SL	2 F.PUT	7 F.POT	0 H	# 0 8 B) D	EIRE FOR	1950P 600P
38438E 03	00 300000.	10255E 03	15756E 05	16798E 05	721396 00	. 287 248 08	SCHOOLE WI	.14018E 80
L FUSE	L SEING	⊩ BAP SL	L F.ROT	t P.RUT	L 1000	.24% MF 801	1.865 E001	, ពួកបច្ចក្សា សូម
30375E 03	.00000E 00	.10135E 01	.23285F 04	20250E 04	54500L-05		.1865SE 04	សូម
M FUSE	M SLING		#1 F.POT	11 P.POT	M IVV	ជាក្រុម មក្ស	11लाम ।	ም ም
.13509E 05	.00000E 00		.31183E 06	3053%E 06	1000018 -04	ព្រះ ខេត្ត	- 18945मा भर	መጀመር መንግር ነውር
N FUSE	N SLING		N F.POT	# P.POT	M 1.77	н188 ВОТ	61FF E09	FFF
53991E 03	.00000E 00		.13838E 05	13296E 05	.611% E 05	.11798E ОТ	4730%F FM	CONTROLE THE
BETA FS	88TA GL	SL WGHT	86TA 68	887H P2		6169 800	BIPE POD	Tracks
16243E-01	80 308880.	.75000E ՈՎ	159706-01	16477E-81		.16901E 01	11514E 01	Fellowersk - 190
ALPH FS .69388E 01	ALPH SL .26000E 01	J SL .77711E 04				#FP BOIN' .71753€ 03	HPR €0107 31078E 03	
VINTF .88548E 01	THETA SL .00000E 00	L 5L .20000E 02			U!FP .00000E 00		788 B0I97 .10349€ 03	
WIFS 87440E 01	SMA SL .20000E 02	R SL .80000E 01					AICRR .28295E 00	810RR .30001E 01
	1 RSÁŠR 1 NSTÁLL 1 NGREFF I	0 1 1 1						

TABLE 28.- STATIC TRIM DATA

$V_{eq} = 75 \text{ knots, SAS on}$ $\beta = +15^{\circ}$

15:50 FEB 11.183 CH-47B TRIN DATA PUN PO. 57

VTOT = 7' G.W. = 33000.0	5.0 KT U 0 LBS PPM =	≠ 73.4 KT 34.1 н	V = 1 = 98,5 FT	9,5 kT U TEMP - JRO	= 7,7 °C	.5 18 50	16 = .0 Is	. e ल4ल)
THETA	₽HI	PSI	P	្	.636€9F 3	00	OMESH FP	: 11분명위 유턴
.30664E 01	.34472E 01	,0∩000E OC	.00000E 09	ព្រំ 3១ឆ្នំ«មាន		.77∴ 75-02	.:407 € Edi	. 111의 유명원 (01
DELB PLT 16372E 01	DELS PLT .81068E 00	DELF PLT 13839E 01	#####################################	16(8 10⊺ ∹2028 € 00	TELV NO	18.8 10T 187390 001	1.4500-47.45 - 64.1 1.445-1.45 - 43.15	ः कुरान्त्र इस्ट्रेशनाची वीत
THETO FR	AICEP	BIC#F	THETA PP	1 00	177	11.7	1 77	1.5813.5
.15831E 02	.16346E 01	.57170€-01	.16840F 00 .	.7.04008 05	127 1941 - 196	1199 H HE HE	140,68 09	.15.01.6
SIGNA FP .66979E-01	\$160A PP .66979E-01	GADMA CS .13876€ 01		аниция ЕЕ +.3.2008-01	Length of the	H FF John Color	141 EE	There has, .:1-565 oc
THRUST F	MOPMAL F	51D€ F	10800E (. HUL FA	11 (1) 1 m	TO A LEGICAL	(16 ()) + 4	ForE
.16229E 05	.81948E 03	.51833€ 03	00 41861E.	. SPOKAE NO	15 17 1 (1)		()(0) = ()	Income gu
THRUST R	NOPTAL P	SIDE P	FSH-088 P	: HUB FM	11 90 1 12	TO THE P	[0.1 Ten 1.5	a for
.16632E 05	.84317E 03	130046 03	.26581E 05	:07000E 08	1316 16 07		(10.1 Statement)	154 villor
OT FR .46379E-02	0H F€ .33421€-03	€77 FF 14814E-03	(0) FF 1380,575 0.5	40 FF . 9986,98 -011	41 E .1300 T -41	1 1 FB: 111	हा क्तार १८ भागकार मा	
CT RR	0H PP	07 PP	00 PF	40 PF	# 1 P#	E1 PF	.16581E 00	
.47535E-02	.24070E-04	37167E-04	.253266463	.41504E 01	- # 47 - 21 - x11	.19 BJC BD	.16581E 00	
X FUSE	∷ SLING	եհորգ Տե	33 F.E90Î	.: Թ.ԲՕԾ	11.11	_	810 FEE	F-TO F-F1P1
90283€ 03	12388E 04	.Ծողորդ ու	.16330E 94	.1645:18 մա	11828 11.001		////688 011	- 10178F - 01
Y FUSE	7 SLING	NU 31.	Y F.PGT	. 6.61T	7/9	710 € BUD	#:10# #:01	THUR BY D
∼.23691E 04	90 300000.	. ᲛᲘᲘᲘᲛᲜ - ᲛᲘ	.28435E 03	.10340E 03	15.7-101	15 18 01	77%71F en:	.:50 BIE W.
Z FUSE	2 SLING	140 SE	3 F.F07	2 P.POI	2 9	₩10P BOD	EIDE 800	[80€ E3€]
12257E 03	00 300000.	10255€ 02	16173E 05	16600E 05	3809-1	15047E 01	.06058E 81	.16049E 011
L FUSE 42770E 04	L SLING .00000E 00	⊩ BAP S∟ .10135E 01	L F.ROT .139568 04	l P.FOT .28780E 04	10056E-03	HBE BGD .24 41E 04	LHBF BUD .3039ME 07	1999 1865-1990 1991-1991
M FUSE	M SLING		N F.POT	(1 P.POT	# 1777	1886 80D	1988 BUD	upa
33965E 04	.00000E 00		.32378E 06	∼.31934E 06	.248478-83	.45373E 04	53988 A3	.សូសសមាទ សិស
N FUSE	AN SLING		N F.POT	N P.ROT	N 122	#1FF BOD	A1FF B0D	សមា
.12290E 04	00 300000.		.27219E 05	28442E 05	.30555E-04	.30001E 01	~.36840E-01	ព្រះពេញ ១១
BETA FS	BETA SL	SL UGHT	BETA FR	98TA PP		BIFF BOD	#1FF ECD	. 089
.15167E 02	.00000E 00	.75000E 04	.15261E 03	.151648 02		.17903E 01	.20734E 00	.08880 88
ALPH F5 22836E 01	ALPH SL .26000E 01	J SL .77711E 04				HER BODY .337018 03	HPR 8000 .47268E 02	
VINTF .87069E 01	THETA SL 000000E 00	L SL .20000E 03			WIFF .00 300000	78435E 03		
WIFS 94411E 01	SMA SL .20000E 02	R SL .80000E 01					AICFR 76565E 00	BICRP .29272E 01
CONTROI ISL ING IDCPT RSASO ISTEADY NTROCR ISL TRM	1 RSÁSP 1 RSÁSR 1 NSTÁLL 1 NGREFF	0 1 1 1						

TABLE 29.- STATIC TRIM DATA

$V_{eq} = 75 \text{ knots, SAS on}$

 $\beta = -15^{\circ}$

CH-47B TPIM DATA PUM NO. [

19:26 FEB 22.183

VTOT = 7 G.W. = 33000.	5.0 FT U 0 LBC PPM =	= 73.4 FT 24.1 н	V = = 96.5 f	19.7 KT - W 7 7F1F = 135	= 2.5 · I :.0 FS 1.0 S ·	.d (N I)	nn	N FHF =	.0
THETA .306598 01	PHI 405078 91	PS! .⊎0000€ 00	P .000001 00	0 .0000000	F .២៩៦៣០៩ ១៤	NHA .287 OF 44	ОМББН FF .34695F Ю.	სტნ64 PP "ეფივზნ ტე	
DELB PLT 17032E 01	D&LS PLT 471536 Mg	DELA E T .14101E ō.	ซียีนนี ซีนา .45ศ53ศ ตรู	PELB TOT Pylive On		11 5 TST .11 5 F FGT	561, TOT .450536 01		
THET0 FR .15793E 02	AICER 622338 mm	810FF 218446 00	THE IN SE . Note of the	1.11 . Winder	1000 1000 - 1000 - 1000	1. 1 .1 He down	1 7 14,000 nS	1.0965 F	
SIGMA FP .66979E-ก1	\$16MA PP .669796-01	GA(NA F5 .13sot⊬ 64		कुल्याकं हरू हर्माकं स्थान	Local Francis	10 10 10 F)	11 FP .12574 70	मिल से प्रातः - 14 व्याची प्रात्ता	
THRUST F .16205E 05	អល់FMAL F .893376 ស្ន	310€ = =.1.0£1 % 008	7000000 5 210716 05	1 (D. 189) 1 (1 (1 (3 (3 (1))))	Mark Andrews	10 11F 1 F	101 in 19 103 e 01	$\label{eq:continuous} \begin{array}{ccc} & : & \text{if } g_{i} \\ & : & \text{if } g_{i} & \text{if } g_{i} \end{array}$	
THPUST P .16689E 95	NUPTHA F .18670E 83	SID 63 .247126 63	7987009 P .947090 AS	THUS IF	18 k H. Ba 18 m 18 h H. Ba	31137 23 03	14 (1) F9 . 107 P3 - 01	F #9 . School - 47	
OT FP .46316E-00	04 FF .35533F-03	07 FF 349036-04	[한 토론] . 290년 전 - 103	н0 fF .701.7E 01	61 13 12007 01	and Ark Lander Green	10 Any 44 13 10 At 105		
OT PR .47698E-02	UH PR .30405€ 04	f (FP .70635€ 04	ପ୍ର ମନ .ଅଟନ୍ତଅଧ-ରସ	⊬9 P€ .41:50€ 01	120727 6(=	FILEF TEATERS	U 605/ PP .26/888 (45)		
% FUSE 88404E 03	:: SLING .004000E 00	երհինը 3L . Գույնուն հա	00 F.AOT 165216 04	16.F0T 8b 318398b.	15.00 117.000 01		E(1) F F/F =() 6. (AF - 011	f:I□ FF:F 1155°E -01	
Y FUSE .24190E 04	7 SEING .00000E 00	NU SL .00000000	Y F.F0⊺ .11573E ∂3	77 ค.คนา 21สามสา ค.ศ	MOTH LEGeleneFlorie	- 15 4 1 3 Avi		1868 POD 1809 W HJ	
Z FUSE 62575E 03	2 SEING 00 300000.	MU 5L .000006 00	7 ค.คกา เคียนโดย	- 1604 W 05	7 (1) +.3000 (1 (1)	6070 Fr FRED 1 50557 001	BMCF BUD c.fad Hi	1408 800 .10 398 សិខិ	
L FUSE .37516E 04	L SEING 60 300000.	BAR 9L .00000E 00	L F.80↑ 96409€ 03	1 8.801 27530E 04	2 - 1 07 - 1 0500 761 () 1	(3.14 Fe) (3.140 4E 904	188 9 891 44 757 74.	PEP JOHNOVE ON	
M FUSE ∸.22235E 04	M OLING .00 360000.		M F.FOT .32130E AG	11 F. PO* 31 (1)6 (0)	11 1777 19474만 최조	577 € 1917 .881 ved 044	HHERE HILLS - Charles SE HILL	FER FRENCHES EN	
N FUSE 46051E 03	4 SLING .00 300000		N E.POT .23447€ MS	N P.POT 22985E 05	44 ICU 119038-04	ния вир. 1360 186 фи	#166 BUD - 40159E NO	ស្តីស .សមាធិសាខា សព្វ	
BETA FS 15187E 00	86 TH 36 .00 300000	5L UGHT .75000E 04	BETA FP 15388E 02	BETH RM 15187E OC		1865 - 18	EILER (400) .1441.F (41	(संदर्भ) असर विद्यानिकासस	
ALPH FS 24390E 01	ALPH SL .000006 00	J SL .77711E 04				1998 BODY 80 BOURES.	HPE BOD√ .381 3€ 00		
VINTF .86814E 01	THETA SL .00000E 00	L Sk .20000E 02			₩1 ₽ ₽ . 0 00000 00	186 BOIN 117758 03	YPR 8010 .26644E 03		
WIFS 94229E 01		P SL .80000E 01					AICPR .52634E 00	BICRR .28629E 01	
CONTROL ISLING IDCET PSASO ISTEADY NTPOCP ISLIPH	I PSASP I I RSASP I I NSTALL I I NGREFF 0								

TABLE 30.- STATIC TRIM DATA

$V_{\rm eq}$ = 75 knots, SAS on Coordinated, level turn ϕ = +30°

19:48 FEB 22.183

CH-47B TRIM DATA PUN NO. 1

VTOT * 75 G.W. = 33000.0		= 75.1 kT 24.1 H			W = 4.2 KT 288.0 DG PKCG =	.0 IN 0.	11 o. = 21	N PHP =	.0
THETA .32988E 01	PHI .29980E 02	PSI .00000E 00	P 93815E+02	0 .72882E-0	ត i .i26318 គាក	PH8 .23/94E+02	OMEGA FR .339508 หว	0MEGA RR .24212E 02	
DELB PLT ~.19848E 01	DELS PLT .22591E 00	D€LR PLT .559576+01	₹860 PLT .51350E ∂1			1818 701 17498 00	DELC TOT .51%500 01	н 10Т 34755€-01	
THETØ FP .16680E 03	AICER .10386E 01	810FF -,33938F 00	THETO RE .10123E 03	1008 , 44 féité - 60	177 5 .202501 (%)	1.7 .15 00 E 66	152 14900E 05	1.8965 F .194 43E 00	
SIGMA FR .66979E-01	916MA RR .669798-01	อีคเทศ 65 137546 ซิเ		ւնՈւն։ 3450°61 -ն		1 1 10 10 10 0 0 0 0 0 0 0 0 0 0 0 0 0	111 FP .1735/1 194	11678 ଏହି. .1337ମିଆ ପ୍ର	
THRUST F .18930E 05	MOPMAL F .10798E 04	510E F .35786F OR	TORCฟE E .25ค8∀E ค5	HUE 1894 AbE 0		11 변화 [편 17][11] 제 변환	141 140 4 F 111 12E - 41	. 540 245 (67)	
THRUST R .19577E 05	NOFMAL ₽ .21476E 03	51DE 8 .12879F 03	FORMULE 	L HU6 .101036 Պ		তে স্কৃতিক কুল্ডিডিটি ক্ষ	##. Tek EFF .11.764E-4 1	FORF FORESET NOT	
OT FP .54644E-00	LH FF .31186E-03	07 FF .103368-03	ាយ ៩៩ . 2415 សិ - សេនិ	ил БЕ .4 1400 Е.О	01 5 P 1 300 5 F 601	Pt FF .2047/16 01	U BOW 14 Charle by		
OT PP .55367€-03	(H PR .60738E-04	07 PP .36417E-04	00 PP .32160E-93	на РР .44611E а		E-1 E-R . 1 17 35E 11	0 60V FF .34113E 05		
X FUSE 90883E 03	∺ SLING .000000 00	LAMDA SL .00000E 88	13 F.FOT 18303E 04	F.Po .11513E 0			1917 1918 111	#40 FFF9 .17093E 01	
γ FUSE 1911∂E 03	7 SLING 60 300060.	NU BL .000000 00	7 F.PO™ .31559E 03	7 F.PO 108651 6		- 100 € 600 100 € 70	E 10 F (8000) - 1 7 F (17)F (2001)	THOF BOD .166888 02	
2 FUSE .38254E 03	2 3LING 00 300000.	18 101 00 300000.	2 F.ROT 13853E 05	J P.PO 19944E 0		941 F 3945 .542175-01	8:10F: 8:10 .le 30:45 - 0:1	1808 801 . 101226 03	
L FUSE →.31229E 03	L SLING .00000E 00	/ BAF SL 00 300000,	E F.HUT 46 307651.	∟ P.F0 992428 0		.760376 64	18125€ H-1	FFF . 14306E-01	
M FUSE 13636E 04	11 St.1MG 00 300000.		N F.POT .37554€ 06	H P.PÖ 37435E 0		1945€ 80⊉ .435°-48 Bu	1881 BCD .428198 M	088 .73%808-01	
N FUSE: .15062E 03	N SLING .00000E 00		N F.ROT .31665E 05	№ P.P0 31782E 0		₩10 F 19610 .300 55E 901	4188 801 00 360285.	ERR 409436-03	
88TA FS .106948 01	BETA SL .00000E 00	5E WGHT .75000E 04	BETA FP .22387E 01	D& TA F 31335E-0		6188 8010 18 87778	BIRR 801 .12237E 81	088 .728826-01	
ALPH FS 17776E 01	ALPH SL .00000E 00	J SL .77711E 04				ୟସନ BUIG .10903E ପ୍ୟ	HER BODY .11468F 03		
VINTF 10659E 02	THETA SL .00000E 00	L SL .20000E 02			UTPP .00000E 00	YER BODY .31559E 03	YPR 80DY .12888E 83		
WIFS -,11025E 02	SMA SL . 20000E 0 2	R SL .80000E 01					AICRR .92778E-01	BICRR .26309E 01	
CONTROL ISLING INCAT PSASO ISTERDY NTPOCR ISLTROL	1 RSAGR 1 PSAGR 0 NSTALL 1 HGREFF	Ø 1 1							

TABLE 31.- STATIC TRIM DATA

$V_{eq} = 75 \text{ knots, SAS on}$

Coordinated, level turn $\phi = -30^{\circ}$

CH-47B TRIM DATA RUN NO. 1

19:52 FEB 22, 83

13.32 120	22, 03			KON NO	,				
VTOT = 7 G.W. = 33000.		= 75.1 KT 24.1 H	V * * 98.9 FT	1.4 KT ผ T TEMP = 288	= 4.2 KT 8.0 DG DXCG =	.0 IN D.	. e ao	N PHP =	.0
THETA .22435E 01	PHI 29912E 02	PSI .00000E 00	P .57015E-02	0 .73042E÷01	R 13€31E 00	RH0 .23003E-02	ଫାଲିଲେନ ମନ .24311ମ ମଣ	0MEGA PP .23959E 02	
DELB PLT 21801E 01	DELS PLT .23625E 00	DELR PLT .46082E-03	DELC PLT .51301E 01		DELS 10T .235966 00	1-ELP 101 .123318 00	DELC TOT .51301E 0:	H DOT 71602E-02	
THET0 FP .16551E 02	AICFR .82479E 00	BICFR 37038E 00	THETO PP .18333E 02	1%% .34000£ 05	1977 .202596 63	122 .191005 06	1:2 .14900€ 05	I.PFES F .100140E 0.	
SIGMA FR .66979E-01	SIGMA R R .66979E÷01	GAUMA ES .13751E 01		1800A FP 34/43E-81	Lenner FF 4317.1 01	110 FF .17374E 000	មា សម .1756/F សាម	િમાહિન 100. .11ક70€ છેલ	
THRUST F .18930E 05	NORMAL F .10566€ 64	SIDE F .322716 A3	TOPOUE F .34843E 65	1 HU8 FF 10 308788.	M H00 FF .48557+ 64	V TIP ER .TUKUTU ES	DEL 14 F9 .11176 Pi	i sangere in c	
THRUST P .19593E 05	МОРПНЕ Р .24384E 03	SIDE P .11971E M3	TORQUE P .341658 00	HU€ RP .17509E 04	ρη μαβαιροίο 154414Σ 113	9/ TIFFE .71.70F 83	I:F1 TH F:F .113546 -P1	F PP .34600E BC	
OT FR .53566E-02	CH FR .30168E-03	CY FR .912766-04	00 FB .23423E-03	нӨ БР .463678 ӨТ	et FF Description	81 (# .1948)# #01	10 (100 1 P) 10 (104 P) (10)		
CT RR .56592E-02	CH PP .70427E-04	CY PP .34576E-04	00 PR .32893E+83	∺0 8€ .50370€ 01	A1 PR .37517E 40 _	01 PP .12.078 PM	0 60V PP .341656 05		
X FUSE 90882E 03	2/ SLING .00000E 00	LAMDA SL .00 300000.	∺ F.ROT .19096E 04	11 P.POT .11381E 04	H W .30773E 01		ED FEF +.30094E+01	ED FAR . DHURE OI	
Y FUSE +.19110E 03	Y SLING .00000E 00	NU SL .00000E 00	Y F.ROT .32418E 03	Y R.ROT 13883E 03	7/11 .41410£-00	A10F 80D .835.04E 00	810F 80D 3691AE AA	THOE BOD .16551E 02	
Z FUSE .303176 03	ଅଟୋମର .ଷ୍ଟ୍ରପ୍ରତ୍ୟ ପ୍ର	MU SL .00000E 00	Z F.POT 18372E 05	Z R.ROT 195626 05	Z-11 37129E 0.2	610P 80D 32861E-01	0.08 4018 10 300890.	THOP BOD 10 388:01.	
L FUSE 31214E 03	L SLING .00000E 00	K BAR SE .00000E 00	L F.POT .13911E 04	L R.POT 97929E 03	L 1201 .29382E A2	LHEF BOD .28849E 0 4	UHBP 600 .175916 04	PER +.14008E-01	
M FUSE 12698E 04	M SLING .00000E 80		11 F.POT .37551E 06	M P.ROT 37436E 06	## 177 61451E-83	NHHE 800 .42650E 04	NHER BOD E0 350113.	0FP .73000E+01	
N FUSE .15061E 03	00 300000.		N F.ROT .31612E 05	H R.ROT 31829€ 05	N:100 34973E-03	AIFR BOD .28/9/E 01	A1FR B0D .42128E 00	PPP .36136E-03	
BETA FS .10694E 01	8ETA SL .00000E 00	SL WGHT .75000E 04	BETA FP 79081E-01	BETA RP .21648E 01		81FP 80D .1947SE 01	BIPP BOD .12128E 01	088-01	
ALPH FS 17825E Ø1	ALPH SL .00000E 00	J SL 77711E 04				HER 80DY .10661E 04	HPP BODG .24818E 03		
1134175	THE TO SH								
VINTF .10673E 02	THETA SL .000000E 00	L SL .20000E 02			WIPR .00000E 00	YEP BODY .32413E 03	.11041E 03		
WIFS .11036E 02	SMA SL .20000E 02	R SL .80000E 01					AICRR .61544E-01	BICRR .26304E 01	
	1 PSASR 1 NSTALL 1 NGREFF (3. 1 1							

TABLE 32.- STATIC TRIM DATA

$V_{eq} = 0.1 \text{ knot, SAS on}$ Gross weight = 22,000 1b

СН-478 — ТО!И БАТА РОМ 10... 97

15:58 FEB 11.183

13:38 FEB	11. 60			- (0)				
VTOT = G.U. = 32000.0	.1 +T U 3 L80 PPM =	* .1 FT 04.1 н	ម ក អ្ន.ស ៩៣	egytyeT en	e joint T	.7 19 12	mt Le Ie	f Ciri
THETA .66128E 01	PHI 34981E 00	PE1 .00000E 00	P _pagene de	e saoi deb	D) Vi	in the p	. φτω τα 	ng phe
DELB PLT 10060E-01	DELS PLT .17969E 00	DELP PUT 23633E-03		- at the term	tropic trans	The state of the s	143 mg - 11 143 mg - 111	A CAR AND AND HAD
THETO FP .16103E 02	410FP .332330 00	810FF 1500/6 01	THEFT FF.	i i i Li diff (Ch		1. (1. (1. (1. (1. (1. (1. (1. (1. (1. (1 .7 . ja defina	the second
\$IGMA FP .66979E-01	\$IGUH FR .66979€-01	GHITTH FT .503109 /		1 2 M 1 3	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	to the second	11 11 20 5 5	in the second
THPUST F .11246E 05	188819E F .29524E 83	5116 f .653065 f :	i (q racc	14 - 41 14 - 41		14 FF	11 11	gradients and
THPUST R .11126E 05	1009116E 9 29048E 03	515E F 67917E 7.1	institute.	in the first	10 mm	# (F # W	Million of	A Section 18 Control
CT FP .32141E-02	OH FP .84376E-04	C. FF .13665F C.4	1.5 m/s 1.5 m/s	e. FF , Ne N. A. 11		i signi Limitati and and	. 1 + 1 + 3 ± . 14 571 £ 161.	
OT RR .31797E-03	ÚH RF 83016E-04	07 FB 19412E-04	1 (0 1) F 1257 564 - 14 (3	.6. FF F ≥01	Halife Joseph Color	FILER F. B. Carley	in 1500,000 k for 1100,000 for	
X FUSE 20441E 00	00 SEING 12388E 04	LAMPA SC .00000E AB	11 F.EOT 14678F 04	164.4 16 3920a	11 vi 1770 i - 11	-	EACHEL .350mmE end	FIREFF 1479/2011 - OM
Y FUSE .13716E 00	20132 Y 80 388888	NO SC .00000E (II)	7 8.801 00 35008.	+ F.FUI → 7. WE 07	195.01 W	o if 7 Eulo . The into our	File Ford File Ford	1901 FOID .101938 95
Z FUSE .38017E 03	2 9ETHG 00 300000.	HU 5L 10255E 02	а ғ.Рот 111546 из	2 €.80T 110758 05	7 (f) 17179 44 (a)	1 0 F BOD 1.3 PINC 00	810F F0-0 .15000E 01	1808 80D .101156 83
L FUSE .13943E 00	L SEING 00 300000.	⊩ BHP Sc .10135E 01	L F.POT 31823E 04	2 F.80⊺ .313000 04	€ 11 455 (# 74	1980 B010 .dom:30 M3	LHBF F010 51550F 03	្រុម .មិហ្លាបូ⊲E សាល
M FUSE .55340E 03	00 300000.		11 F.20T .21909E 06	11 P.F67 21% " - He	13 I 17 ***10700***	1098 80D .129996 04	MHERT ESTE TYTTLE OF	ंगक्रमकुक्त कीं। महरू
N FUSE 38400E 00	00 300000.		N F.POT .276668 05	N PLEOT - 2700 IE 00	16 177 255 08 4	9(88 €01 .15083€ 01	н188 (001 14963F 01	"Kanasal, du Les
BETA FS 40553E-01	8ETA SL .00000E 00	SL WGHT .75000€ 04	BETA FP 40318F-81	EET# P3 407.56-01		51FF 80D .35480F 80	E(1FF) 보니(1 - 공투제조(6) (6))	ाहि है , सम्प्रतास्पर्धी सूत्रा
ALPH FS 89613E 02	ALPH St .26000E 01	J St .77711E 04				HFE BUIN .29510€ 03	HPP €0 [67 09043E 03	
VINTF .33558E 02	THETA SL .00000E 00	L SL .20000E 02			WIPP .00000E 00		YRR 801Y 68129E 02	
W1FS 24856E 02	SMA SL .20000E 02	R SL .80000E 01					AICPR 35024E 00	BICRR .14998E 01
CONTRO ISLING IDEPT RSASO ISTEADY NTROCR ISLTRM	1 RSASP 1 RSASR 1 NSTALL 1 NGREFF	9 1 1 1						

TABLE 33.- STATIC TRIM DATA

V_{eq} = 80 knots, SAS on Gross weight = 22,000 lb

18-478 TRIM DATA 15:59 FEB 11.183 Рич ит. VIOT = 80.0 FT 80.0 FT U ± 7. 57 PGS Pripa principal G.W. = 22880.8 LBS PPM -24.1 H 561 A. 17 存品とは of the force of the two THETH -.22475F 00 .28339E 01 , $\mathbb{C}(G) \oplus \mathbb{C}(G) = \mathbb{C}(G)$ ្សាល់ពីនៅ ពេក JOHNSON PA DELE PLT DELS PLT DELF FIT DESIGN OF C 00 E 703 54:00:01 -.15087E 01 . 140635 00 .712008 -01 , 25 (30 d) - 0.1 Charles Trans. 1140 1 600 1.0 163104 31 100 Sept 9 - 200 THETO FF ALCEP ELLER: THUTO IN I LEMEN F .140/3E 02 49076E 00 -.18496F B3 . 10. 14 F. F. 10 TEMPLE NA 11601 - 0 L. Sider in SIGNA FR STGME PP GALLERY F.S. THE THE RE 1 (1) (1) 11 14 of a specific 11 (4 .66979E-01 .669738-01 .1415 E 31 . 44 44 901 THEUST F HÚPBÁL E SIDE 1 ([, 111 .11024E 05 .48.57E 03 11706 H 300 . 17 (1991) - 41.1 , 14 mm THEBUST P 11 0 12 3 I to 18 .23 Peril 10 HUSTINE F 11141 j tele 11 mm ili The second .11277E 05 - សំពេកកាត ព័ន្ធ CATAMERA and ord CT FE LH EP CV FF BUTTE $\frac{1}{n},\frac{1}{n},\frac{1}{n},\frac{1}{n+1}$.31500E-01 . 13003E-03 .3163c1 001 . In 1 de 401 43.00 411 CT PP 1 H FF HIT PP 111-11 .32229E-00 -.17507E-04 .660070E-00 .1,5%,1 05 .. O. . WE 61 10000000 X FUSE HE FOR SLING LHIDA SL 17 H 17 da - 11 BID FRE -.12388E 04 . OUTHING OH -.10118E 04 .1.48.C 64 . . In that we 110105 E W1 11-12-11 Y FUSE T SLING NU SE r F.EUI F: F317 Lateral Kindo Lateral des Elife Bank 19400 gard -.12590E 01 .00000E 00 .0000066 00 .11070E 93 - ...134096 (02) KINDSON FORD 1149 TH R Z FUSE 200 2015/1000 a SLING nu st C FIRBT C P POI 4107 EDD THEFT BUD THOSE ROLL .23562E 03 .00000E 00 -.10255E 02 -.1006.4E 05 -.1134FE 05 , Situation (Light) L FUSE L SUING E BAP SL I F. POI I PLEGI . 1011 .. 2010 - 64 LHEF EGD LHEFT FOR -.50114E 02 .00000E 00 .10135E 01 -.2 0406 02 -1.935E 03 117.00 PE 1913 .สดยหลัย ศัก M FUSE IT SUING 11 (m) , 546 (05 m) HE FOT II E.Pul NOT FOR T193E3F - 2010 .16501E 04 .000000E 00 .21749E 06 -.21 1146 06 ... - 17E N.1 1175 ME 1141 $\mathcal{L}(\mathbb{R}^n) \cap \mathcal{L}(\mathbb{R}^n) \cap \mathcal{L}(\mathbb{R}^n) \cap \mathcal{L}(\mathbb{R}^n)$ N FUSE N SLING N.E.POT H PLEGI -- (1.65 - £45-E 400000 | 14 40 | 140 | 150 | 150 | -.30618E 03 .000000E 00 .182908 05 -.17987E N5 1.1309 (3) 33.44 .191 W 01 100 mark 150 BETH FS BETA SI CL MGNT BETH FF SETH PR 1.111-1-11 BUTTLE BUIL 14.5 -.11082E-01 .000000E 00 .75000E 04 = . 11173E - 01 .11:61E-01 .der #1 #1 1500 (116 PM) 10-62-64 AC ALPH ES ALPH SI 1817 F 067 HEE BOTO .77711E 04 .25971E 00 JANAGE BI .45.55E P3 VINTE THETA SL 1 51 WEELENIN SPE BUILD .**59**853E 01 .000000E 00 .20000E 02 .000000E 00 .110/3E 03 .23365E UZ WIFS SMA SI P SI **AICRR BICRR** 60468E 01 .20000E 02 .80000E 01 -.46995E-01 .30000E 01 CONTROL FLAGS SET UP ISLING 0 IECSCON Ø IDCRI PRASE PSASP RSAS0 ISTEADY NSTALL HITPOOR NGREFF

ISLIPM 1

TABLE 34.- STABILITY AND CONTROL DERIVATIVES, v_{eq} = 0.1 KNOT.

	L	М	N	X	Y	Z				
	SAS off									
δ B δ A δ R δ C P q r u v	-0.34640E-01 .48630E 00 12634E 00 17040E-01 12795E 01 .87128E-01 90288E 01 53257E-03 10771E-01 .39976E-03	0.32816E 00 .74250E-05 .00000E 00 14318E-02 .29530E-01 10973E 01 26861E 00 .11090E-01 .94978E-05 .63815E-03	0.54072E-01 .97491E-02 .19269E 00 55263E-03 14808E-01 13378E 00 89168E-01 .73452E-03 .58132E-03	0.57000E-01 .10006E-04 47646E-06 .98157E 00 .42600E-01 .27807E 01 15904E 00 19998E-01 45945E-03 .30085E-01	-0.48486E-03 .10917E 01 .98684E-02 .65680E-01 28362E 01 73125E-02 33045E 00 27807E-03 10704E 00 .22338E-02	0.49865E-01 76234E-04 .00000E 00 84737E 01 12520E 00 26472E 00 52506E-01 .31149E-01 .40019E-02 29831E 00				
			SAS on							
δ _B δ _A δ _C ρ q r u v	-0.34638E-01 .48630E 00 12634E 00 17013E-01 21634E 01 .86503E-01 .59843E-01 53341E-03 10786E-01 .39204E-03	0.32817E 00 .61875E-06 .61875E-06 14349E-02 .29517E-01 10992E 01 26865E 00 .11090E-01 .86934E-05 .64854E-03	0.54074E-01 .97481E-02 .19269E 00 54782E-03 22771E-01 13382E 00 32381E 00 .73457E-03 .60258E-03 .40124E-04	0.56998E-0147646E-06 .00000E 00 .98214E 00 .42658E-01 .27653E 0115908E 0020019E-0145872E-03 .29589E-01	-0.47325E-03 .10917E 01 .98734E-02 .65751E-01 48053E 01 84882E-02 35487E 00 27930E-03 10704E 00 .22011E-02	0.49895E-01 .00000E 00 76234E-05 84789E 01 12531E 00 11685E 00 52430E-01 .31343E-01 .39943E-02 29380E 00				

TABLE 35.- STABILITY AND CONTROL DERIVATIVES, v_{eq} = 20 KNOTS.

	L	М	N	Х	Y	Z					
	SAS off										
δB δA δC P q r u v	-0.10461E-01 .48558E 00 13097E 00 21810E-01 88622E 00 .23866E-01 64698E-01 .36675E-03 87699E-02 .83370E-03	0.33548E 00 21656E-04 .21038E-03 83005E-02 .17136E-01 16339E 01 24771E 00 .15577E-01 87330E-03 .16648E-01	0.52540E-01 .86124E-02 .19173E 00 .20635E-02 58689E-02 15186E 00 76432E-01 .93359E-03 .23044E-03 .71363E-03	0.42182E-01 .93387E-04 72899E-04 .72384E 00 .27653E-01 .28998E 01 11116E 00 12844E-01 .14363E-03 .26766E-01	0.63174E-01 .10867E 01 77150E-02 .53387E-01 15122E 01 15524E 00 20182E 00 .20535E-02 46031E-01 .43533E-02	0.25168E 0010444E-02 .12274E-0284539E 0110570E 0027731E 01 .17641E 0040523E-01 .44315E-0228244E 00					
			SAS on								
δB δA δR δC P q r u	-0.10458E-01 .48558E 00 13097E 00 21808E-01 17699E 01 .23845E-01 .94610E-01 .36832E-03 11932E-01 .83532E-03	0.33549E 00 .50737E-04 .11632E-03 83098E-02 .17608E-01 16340E 01 24799E 00 .15576E-01 87052E-03 .16647E-01	0.52542E-01 .86163E-02 .19173E 00 .20679E-02 11083E-01 15184E 00 31011E 00 .93124E-03 .45401E-02 .71129E-03	0.42205E-01 19535E-04 86717E-04 .72385E 00 .27304E-01 .29000E 01 11104E 00 12845E-01 .14368E-03 .26766E-01	0.63190E-01 .10867E 01 77228E-02 .53403E-01 34746E 01 15530E 00 19343E 00 .20536E-02 46926E-01 .43535E-02	0.25147E 00 .28207E-03 .11588E-02 84541E 01 10080E 00 27756E 01 .17427E 00 40519E-01 .44441E-02 28244E 00					

TABLE 36.- STABILITY AND CONTROL DERIVATIVES, v_{eq} = 40 KNOTS.

	. L	М	N	Х	Y	Z					
	SAS off										
δΒ δΑ δC P q r u w	0.16262E-01 .48558E 00 13531E 00 95659E-02 95132E 00 70335E-01 83902E-01 27828E-03 89953E-02 .27440E-02	0.37444E 00 .74250E-05 .10642E-03 .12353E 00 .12811E-01 17676E 01 25619E 00 .73133E-03 15318E-02 .25877E-01	0.36975E-01 .76233E-02 .19126E 00 .53661E-02 48200E-02 82320E-01 68326E-01 .25274E-03 .32037E-03 .24907E-04	0.35347E-01 .30970E-04 .95293E-05 .49135E 00 .26064E-01 .28099E 01 91516E-01 14508E-01 .71239E-03 .28541E-01	0.10732E 00 .10845E 01 23260E-01 .65350E-01 17385E 01 26218E 00 24125E 00 45629E-03 59403E-01 .71078E-02	0.64975E 00 41167E-03 .19059E-03 79678E 01 93921E-01 32915E 01 .31847E-01 10797E 00 .15510E-02 34978E 00					
			SAS on								
δΒ δΑ δC p q r u v	0.16266E-01 .48558E 00 13531E 00 95641E-02 18352E 01 70338E-01 83904E-01 16688E-03 15384E-01 .27579E-02	0.37447E 00 .16706E-04 .10147E-03 .12354E 00 .12746E-01 17676E 01 25619E 00 .30276E-02 15291E-02 .26180E-01	0.36974E-01 .76228E-02 .19126E 00 .53671E-02 82783E-02 82320E-01 68327E-01 .47155E-03 .88345E-02 .53823E-04	0.35376E-01 .33829E-04 .76234E-05 .49134E 00 .25948E-01 .28099E 01 91541E-01 14280E-01 .71267E-03 .28559E-01	.10733E 00 .10845E 01 23263E-01 .65357E-01 36978E 01 26219E 00 24125E 00 .20976E-03 61624E-01 .71934E-02	0.64948E 0041167E-03 .19059E-0379677E 0192587E-0132914E 01 .32076E-0110406E 00 .15575E-0234916E 00					

TABLE 37.- STABILITY AND CONTROL DERIVATIVES, $V_{\ensuremath{\mathbf{eq}}}$ = 60 KNOTS.

	L	М	N	X	Y	Z					
	SAS off										
δB δA δC P q r u v	0.20527E-01 .48669E 00 14165E 00 18126E-02 10201E 01 66438E-01 88795E-01 77862E-03 92920E-02 .20447E-02	0.41184E 00 .14850E-04 .10457E-03 .23377E 00 .19924E-01 15813E 01 27361E 00 72600E-02 12844E-02 .14508E-01	0.29139E-01 .62967E-02 .19128E 00 .45609E-02 45460E-02 50139E-01 63247E-01 .27577E-03 .74233E-03 30937E-03	0.47545E-01 .23823E-04 .95293E-05 .32755E 00 .21280E-01 .26308E 01 69984E-01 89043E-02 .45669E-03 .34278E-01	0.94130E-01 .10852E 01 44399E-01 .63338E-01 19788E 01 13403E 00 24875E 00 13639E-02 72300E-01 .43612E-02	0.84306E 0035830E-03 .25920E-0381505E 0162703E-0164037E 0018037E 0075485E-01 .23884E-0256357E 00					
			SAS on								
δ B δ A δ R δ C P q r u v w	0.20524E-01 .48669E 00 14166E 00 18128E-02 19063E 01 66423E-01 88790E-01 49027E-03 18995E-01 .20616E-02	0.41183E 00 .43313E-05 .10333E-03 .23375E 00 .20035E-01 15813E 01 27361E 00 14984E-02 12780E-02 .14837E-01	0.29137E-01 .62940E-02 .19128E 00 .45590E-02 555991E-02 50141E-01 63247E-01 .68419E-03 .13316E-01 28640E-03	0.47545E-01 .19059E-04 .12865E-04 .32753E 00 .21198E-01 .26308E 01 69969E-01 82746E-02 .45590E-03 .34319E-01	0.94120E-01 .10852E 01 44434E-01 .633311E-01 39406E 01 13399E 00 24874E 00 48504E-04 76522E-01 .44362E-02	0.84314E 00 38880E-03 .18296E-03 81503E 01 60911E-01 64041E 00 18052E 00 63429E-01 .24044E-02 56292E 00					

TABLE 38.- STABILITY AND CONTROL DERIVATIVES, $v_{eq} = 80$ KNOTS.

	L	М	N	Х	Y	Z					
	SAS off										
δB δA δC P q r u v	0.18186E-01 .48646E 00 13782E 00 32358E-02 10358E 01 58419E-01 86358E-01 72031E-03 10178E-01 .18117E-02	0.43017E 00 .19800E-04 .13118E-03 .22604E 00 .26438E-01 16518E 01 27552E 00 80721E-02 77693E-03 .11446E-01	0.25086E-01 .71456E-02 .19154E 00 .50223E-02 11789E-01 27933E-01 62181E-01 .29346E-03 .13452E-02 55603E-03	0.49940E-01 .42405E-04 .11435E-04 .41855E 00 .20552E-01 .26311E 01 64663E-01 57070E-02 73144E-03 .42780E-01	0.69011E-01 .10864E 01 31017E-01 .47280E-01 20591E 01 41224E-01 24425E 00 85947E-03 87794E-01 .24069E-02	0.72319E 00 57176E-03 .22870E-03 93412E 01 53021E-01 40780E 00 18331E 00 .23015E-01 .48923E-02 63679E 00					
			SAS on		<u> </u>						
δΒ δΑ δC P q r u v	0.18185E-01 .48646E 00 13780E 00 32329E-02 19214E 01 58435E-01 86361E-01 46929E-03 16872E-01 .18230E-02	0.43017E 00 .80437E-05 .13179E-03 .22606E 00 .26402E-01 16518E 01 27561E 00 20446E-02 78216E-03 .11717E-01	0.25085E-01 .71494E-02 .19154E 00 .50244E-02 14384E-01 27931E-01 62185E-01 .64880E-03 .10384E-01 53788E-03	0.49938E-01 .41929E-04 .17153E-04 .41854E 00 .20525E-01 .26312E 01 64679E-01 50124E-02 73635E-03 .42811E-01	0.69008E-01 .10864E 01 30952E-01 .47293E-01 40223E 01 41266E-01 24427E 00 .10565E-03 89888E-01 .24501E-02	0.72302E 0059463E-03 .18296E-0393412E 0152983E-0140757E 0018317E 00 .33220E-01 .49240E-0263634E 00					

TABLE 39.- STABILITY AND CONTROL DERIVATIVES, $v_{eq} = 100$ KNOTS.

		<u> </u>	r	·	, 						
	L	М	N	X	Y	Z					
	SAS off										
δB δA δC P q r u v w	0.90613E-02 .48682E 00 13497E 00 96637E-02 10130E 01 21003E-01 82925E-01 65926E-03 11280E-01 .13236E-02	0.44705E 00 .13612E-04 .15283E-03 .19979E 00 .32085E-01 17096E 01 28395E 00 68107E-02 35758E-03 .11651E-01	0.37866E-01 .78353E-02 .19208E 00 .82407E-02 17801E-01 60791E-01 60608E-01 .85861E-04 .17701E-02 70293E-03	0.50019E-01 .62417E-04 .10482E-04 .48930E 00 .21528E-01 .26825E 01 64930E-01 12636E-01 13568E-02 .49820E-01	0.56612E-01 .10891E 01 20293E-01 .57241E-01 20089E 01 .25619E-01 24014E 00 75137E-03 10514E 00 .84167E-03	0.61777E 00 78521E-03 .31256E-03 10341E 02 48580E-01 52836E 00 18054E 00 .77988E-01 .66061E-02 67691E 00					
			SAS on								
δ B δA δ C P q r u v w	0.90609E-02 .48681E 00 13497E 00 96468E-02 18992E 01 21047E-01 82966E-01 57006E-03 16821E-01 .13294E-02	0.44708E 00 .16706E-04 .17758E-03 .19983E 00 .32175E-01 17095E 01 28400E 00 22004E-02 35272E-03 .11841E-01	0.37866E-01 .78342E-02 .19208E 00 .82411E-02 21583E-01 60784E-01 60604E-01 .47949E-03 .94919E-02 68916E-03	0.50063E-01 .54793E-04 .16676E-04 .48935E 00 .21556E-01 .26824E 01 64910E-01 12140E-01 13535E-02 .49846E-01	0.56606E-01 .10891E 01 20313E-01 .57290E-01 39764E 01 .25607E-01 24013E 00 21226E-03 10633E 00 .86571E-03	0.61809E 0071660E-03 .29731E-0310341E 0247151E-0152264E 0018054E 00 .84532E-01 .66145E-0267667E 00					

TABLE 40.- STABILITY AND CONTROL DERIVATIVES, $v_{\rm eq}$ = 120 KNOTS.

	L	М	N	Х	Y	Z						
	SAS off											
δΒ δΑ δC P q r u v	0.44967E-02 .48837E 00 13277E 00 12798E-01 96118E 00 .28512E-02 69907E-01 47924E-03 12484E-01 .11215E-02	0.45113E 00 .80437E-05 .17263E-03 .18235E 00 .38905E-01 17035E 01 29838E 00 41431E-02 .92008E-04 .12060E-01	0.41217E-01 .85038E-02 .19330E 00 .13521E-01 25580E-01 64121E-01 66858E-01 .87713E-04 .21020E-02 70963E-03	0.52785E-0126682E-0473376E-04 .51532E 00 .23660E-01 .27440E 0170063E-0127700E-0116492E-02 .52272E-01	0.33761E-01 .10958E 01 10244E-01 .64276E-01 18659E 01 .12582E 00 20300E 00 13417E-03 12355E 00 .52805E-03	0.51063E 00 86907E-03 .16772E-03 10988E 02 39966E-01 47326E 00 21412E 00 .63076E-01 .81514E-02 70081E 00						
			SAS on									
δ B δ A δ R δ C P q r u v	0.44515E-02 .48834E 00 13275E 00 12818E-01 18499E 01 .23448E-02 69859E-01 44009E-03 17427E-01 .11216E-02	0.45118E 00 .92812E-05 .17572E-03 .18237E 00 .38673E-01 17036E 01 29837E 00 15333E-03 .10027E-03 .12191E-01	0.41178E-01 .85063E-02 .19329E 00 .13475E-01 30602E-01 63966E-01 66854E-01 .45154E-03 .91899E-02 70072E-03	0.52667E-01 .67658E-04 .21441E-04 .51540E 00 .23319E-01 .27436E 01 69797E-01 27231E-01 16471E-02 .52297E-01	0.33591E-01 .10957E 01 10192E-01 .64092E-01 38448E 01 .11146E 00 20289E 00 .16060E-03 12418E 00 .52671E-03	0.51360E 0083095E-03 .15247E-0310985E 0238880E-0148112E 0022188E 00 .67680E-01 .79958E-0270069E 00						

TABLE 41.- STABILITY AND CONTROL DERIVATIVES, V eq = 130 KNOTS.

		,	· · · · · · · · · · · · · · · · · · ·	···	- 							
	L	М	N	Х	Y	Z						
	SAS off											
δ B δ A δ C P q r u v	0.21123E-02 .49179E 00 13550E 00 14705E-01 93025E 00 .14853E-01 70654E-01 47011E-03 13160E-01 .13102E-02	0.44601E 00 .68062E-05 .79200E-04 .19110E 00 .41965E-01 16772E 01 30869E 00 22112E-02 .27804E-03 .12423E-01	0.43973E-01 .82524E-02 .19517E 00 .15004E-01 29312E-01 68904E-01 56485E-01 13100E-03 .22743E-02 68993E-03	0.65784E-01 .23823E-04 .17629E-04 .35527E 00 .24776E-01 .27638E 01 78874E-01 37849E-01 17813E-02 .42638E-01	0.27197E-01 .11066E 01 15153E-01 .59271E-01 17771E 01 .16740E 00 18537E 00 .25163E-03 13514E 00 .28617E-02	0.46277E 0035830E-03 .53364E-0411143E 0235792E-0130235E 0025638E 00 .13208E-01 .81796E-0270578E 00						
			SAS on									
δΒ δΑ δC P q r u v w	0.21255E-02 .49179E 00 13549E 00 14739E-01 18254E 01 .14795E-01 70668E-01 45135E-03 18035E-01 .13086E-02	0.44608E 00 .12994E-04 .87862E-04 .19101E 00 .42097E-01 16770E 01 30869E 00 .17370E-02 .28193E-03 .12469E-01	0.43970E-01 .82566E-02 .19517E 00 .15009E-01 33686E-01 68886E-01 56483E-01 .25679E-03 .92009E-02 68580E-03	0.65772E-01 .38594E-04 .17629E-04 .35526E 00 .24709E-01 .27638E 01 78869E-01 37269E-01 17801E-02 .42640E-01	0.27233E-01 .11066E 01 15109E-01 .59168E-01 37760E 01 .16725E 00 18540E 00 .49216E-03 13590E 00 .28572E-02	0.46282E 00 52602E-03 .22870E-04 11143E 02 35182E-01 30254E 00 25634E 00 .17447E-01 .83442E-02 70574E 00						

TABLE 42.- STATIC TRIM DATA, SLUNG LOAD ATTACHED

 $V_{eq} = 0.1 \text{ knot, SAS on}$ $\theta_{SL} = 0^{\circ}$

CH-478 TRIM DATH RUN NO. 5

18:28 FEB	22,183		CH-	-478 TRIM RU						
∨TOT • G.W. = 35500.	.1 KT U 0 LBS RPM *	= .1 КТ 24.1 Н	V = - ≠ 97.0 FT		U ≠ 288.0 DG	.o k⊤ p∨os =		.e = 00) IN PHP =	. 0
THETA .66237E 01	PHI 39458E 00	PSI .00000E 00	P .00000E 00	() 306090E	9 თეი, ინ	ngg gg	₽90 .23704F-02	ეტნ6A F .ე4884 წე		
DELB PLT .98861E-01	DELS PLT .202698 00	DELR FLT −.30603E-01	DELC PLT .57566E 01	FFL8 .9⊴0615÷		NES TOT GOVERN	entropy († 1915) Hermanner († 1917) Hermanner († 1917)	DELI TO .5056€£ 0)		
THETO FP .19618E 02	AICER .288356 00	81000 150038 01	IHETO PP. .10496E 03	POI OSCOPE		1777 1887 - 1	1875 17760 % 85	1 Seletini – Dar	D.FFE% ም .110 ያህ ጥ1	
SIGNA FR .66979E-01	SIGNA RR .669798-01	6⊣ММн 85 .48931€-03		Left (164 - 1570 2040 x		4115-i (F) 441 - i (ommunip 1888/1989	(변대 원원 11년 5년) 원 - 미국		
THRUST F .17054E 05	HORMAL F .44803E 03	5106 F .36039F p?	TOPCJE F .43902E 05	լ հԱՄ .424608	- F	1940 - Pr 757 - 1941	/ TIP FP . 1117/58 03	DELTA E .10011€~01		
THRUST R .16515E 05	NORMAL R 43084€ 03	51DE F 13987E 03	TOPOUE R .42771E 05	4. HUB /10366		Filt to	A TIPPER TO COMPUSE	#ELTA F . (0-141-0)		
OT FR .48740E-03	CH FR .12804E-03	0Y FP .24586E-04	00 FP .41623E-03	нн КР .46179E		1 14 477, 61	ET FF 1954-99 00	ე ციү ғ .439036 05		
ČŤ RR .47198E-03	CH RP 123136-03	CY FR 399756-04	00 PR .407458-03	н0 РЁ .447 ЪЕ		1 PF 52F (4)	81 (F -, d h T 60	0 60V F .427718 05		
X FUSE 25129E 00	3 SUING 20386E-02	ยศที่มีค่ 3L .39458E ติก	0 F.POT .002546 04	.15319€		21 01 11		80 APF 00 B91007.		
Y FUSE .20728E 00	Y SLING .83942E-05	NU SL .60008E 06	Y E.EDT .863858-01	Y 8.€ (13958E)		11 5-4i2 - 651	el F Anfo J230 •NE O€	8:178 80 150008 01		
Z FUSE .57495E 03	2 SLING 80 300888.	MW 91 66237E 01	Z F.POT 16914E 05	.7 (P. ⊅) 16/4456-)		71 307 (c)	611P 800 401918 00	810# BU 15000# 01		
L FUSE .21933E 00	19669999999999999999999999999999999999	⊦ BAP SL .:0000E C:	L F.AUT 57997E 04	1 8,81 1 39985.		1 11 14 (01)	: HET 1010 : 425 815 63	±HE₹ 80 21210€ 03		
M FUSE .83688E 03	ANIJS M 80 300888.		M F.ROT .33110€ 06	11 F.F9 325002 :	d6 .875	177 195, 74	0000 000 .333516 84	NHBP 60 71910€ 03		
N FUSE 51126E 00	N SLING 42326E-05		И F.ROT .45193€ 05	N 8.89 451936		17. 528 95	ния 2000 .15043E 01	A1PR 80 149436 01		
BETA FS 45820E-01	BETA SL 44907E-01	SL WGHT .75000E 04	8ETA FR 45553E-01	86Ta 6 453618-			HITE BOD 1.3008E 00	81PP EU −.45583€ 00		
ALPH FS 89685E 02	ALPH SL .65203E 01	J S∟ .77711E 04					HFA 80€7 .44735E 03	HEF E01 43073€ 03		
41248 82	THETA SL .00000E 00	L SL . 20000E 0 2				IPP 80E 88	YFP 80DY -86385E 0 2	YRF BOD .14822E 83		
, MISS								* 4004 W	BICAR 1 Magazi	
.121/31	L'ILIMA-BENH	•								
RSASQ ISTEADY	1 NSTALL	1								
NTROCR ISLIEM		fi								

TABLE 43.- STATIC TRIM DATA, SLUNG LOAD ATTACHED

 $V_{eq} = 75 \text{ knots, SAS on}$ $\theta_{SL} = 0^{\circ}$

CH-475 (RIM DATA RUN NO. 9

19:40 FEB 24,'83

VTOT - 7 G.W. = 25500.	'5.0 KT U 0 LBS PPM •	= 75.1 KT 24.1 H	V = = 99.4 FT		= 1.4 FT 0.0 DC DC ~	.o. tH - DJ	n	U. = 1449 (
THÉTA	₽HI	PSI	P	ๆ	р	rect	ელშეგე ქნ	
.10461E 01	23680€ 00	.000000E 00	.00000E 00	. กอง ย อร อก	, Выдоня — (-	The first f	.ე488 წ. 0	
DELB PLT	0EUS PLT	DELP PLT	DELC PLT	0818 Tol	DEUS (*)01	00 11 TOT	1813 TOT	H 1997
20137E 01	.17364E 00	.11664E 00	.49335E 01	120288 01	11774 M. (*)	1 10 (11) (40)	1453 TE 401	6981F 0.1
THETO FP	#10FR	6]FFF	THETO PR	mod	177	e production of the control of the c	I	10.184.5 F
.16385E 02	.69908E 00	375068 (9)	.17764E 53	Institute on	• 187 dod		. (Astrof. W	14 July 10 C
SIGMA FR .66979E-01	SIGMA PR .66979E-01	GANMA FS .13589€ 01		1 m Mm FF 10~10.00%.~	Leading to Till	e in	Market The Fe	150 H 100. 111 Alexand
THRUST F .16770E 05	NORMAL F .10082E 04	511€ F .27542€ 03	102005 F .23402E 35	_ ielB FP .2dalfo7 Dal	11 4 · · · · · · · · · · · · · · · · · ·	e de pro-	Tir Normal Distribution	1 (12) 1 (4) (9) (4) (15)
THRUST R	NOPMAL P	SIDE R	10000€ 0	. HEND ME	H AUS (↑	H 19	14 0, 100 F/F	4 40
.16834E 05	.237016 03	.139188 03	31586E 05	.15451E 04	.670) (†		• Ford 7 11 - 200	44 01 E 07
CT FR	€H FR	CY FR	00 FR	40 FP	ні Ні	. 1 . 1°	11 17 55 F F	
.47932E-02	.28815E-03	.787176-04	.222968:43	.41315E 01	.307078 ні	. 10 1 0	. 12 460 F 155	
CT RR	CH RP	CY RP	00 F≥	ਜਰੋ ਉਉ	01 F5	12 - 5 1	0 Line Per	
.48112E-02	.67739E-04	.39778E-04	.30092F-03	.ਕ.∵!ਨ£ ਦੀ!	. 150 ZF 1	13 - 15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	.315548 08	
X FUSE	% 3LING	LAMDA SL	K E.FOI	ម ស.គេលាក	91 H		E.D. F.ET	10 FEP
89948E 03	10623E 04	.23680E 00	NEUTTE 04	.១១ភេឌភ សភ	1210075, 5			.12640F-01
Y FUSE .31663E-01	Y SLING .59513E 00	NU 3L .00000€ 00	Y F.FOT .275498 03	V 64,601 13913E 03	1774	10 (10) (10) 10 (10) (10)	FORTH FORE	Temis Bud Temis di en
2 FUSE .53621E 03	Z SLING .00000E 00	MU SL 91139E 01	⊒ F.R6⊺ +.167226 65	.1 6.80T 180006 95	- 3013000	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	2468 L000 .2669.00 04	THORE DOD 15 646 00
L FUSE	L SLING	⊬ BAP SL	L F.POT	L R.RO1	1	43 (31 [)	11435 1010	Petro
37867E 03	.00000E 00	.10100E 01	.77991E O3	990256 03		197 () (04	1505 11 001	
M FUSE 32282E 04	M SLING 00 300000.		11 F.POT .33393E 06	M P.POT 32107E 06	11 f W .529.26-91	The Bright	THERE FOR A SHAME ARE	ອີລິດ ເພື່ອສູ່ສູນຄົນຄຸນຄຸນ
N FUSE	N SLING		N F.EOT	N R.POT	0 - 177	60 0 for	.41 P Fo(P)	.aonane du
72878E 02	11903E 01		.29119E 05	290466 05	.473 895 - 17	7 2004 F1	.450 peta 100	per
BETA FS	BETA SU	SL UGHT	BETA FR	88TA PP		1.178 PO⊅	81.T 100	ម្រាស់
43241E-02	43243E-02	.75000E 04	43653E-02	-,432916-02		.16.41.5 01	.100 RE 01	ម្រាស់ ម៉ូស្
ALPH FS 33565E 01	ALPH 5L .10461E 01	J SL .77711E 04				нар в гру .10001E 04	HER BUIN .7370 E 03	
VINTF .94679E 01	THETA SL .00000E 00	L SL .20000E 02			WIRP .00088E 83	777 BAJA .2/3∀ ≥ 67	TPR B317 .13919E 03	
WIFS 97476E 01	SMA SL .20000E 02	R SL .00000E 01					AICRR .39430E-01	BICRR .26250E 01
	1 RSASR 1 NSTALL 1 NGREFF	Ø 1 1 1						

TABLE 44.- STATIC TRIM DATA, SLUNG LOAD ATTACHED

 $V_{eq} = 0.1 \text{ knot, SAS on}$ $\theta_{SL} = -5^{\circ}$

CH-47B TRIM DATA PUN NO. 1

19:09 FEB 22.183

∨⊺0T ≠ G.W. = 25500.	.1 FT U 0 LBS RPM =	= .1 КТ 24.1 н		0 KT UI 1984 - 191	749. = = EDDT 209.3	,5 to be	. č. = , £t 1•	। ଜ୍ୟାନ ≈ .ଅନ୍ତ
THETA .66237E 01	₽HI 39501E 00	PSI .00000E 00	P .000805 98	្រ ្លាក់កា ក្ ញា <u>ម</u> ស្ថិត្	F .0000018 (**	© 40 ,3°57° 28-63	ଅଟଞ୍ଜିନ ୧୭ ଅଟମ୍ପର୍ଜ (୧୯	011ESH PP .041850 €0
⊅EL8 PLT .98989E-01	DEUS PLT .30334E 00	DELF ALT 301716 01	DELC FLT STSESF OI	16 UB	150.2 7.5	11.07 1.0T 701111111	⊅E. 151 1575a.9-21	स । । .⊶ःगहारुकाइ
THETO FP .13613E 01	AIGER .33875E 00	EICEP 150038-01	ТнСТ а РР' .13497E 03	1.00 1.050.00£ 005	1999 1119 (1997)	in . Line di sar	115 .1303an an	74.96%3 € .110501.01
516MA FR .66979E-01	91GNA FP .669796-01	GANRAN ES .40929E-03		1 : 3 15 6 - 6 6 - 15 7 - 10 18 - 3 14	· · · · · · · · · · · · · · · · · ·	11 0F .787.38303	H1) FR 1. 연원이 H4	Maile do. .10 Hail os
THFUST F .17056€ 05	អស់មហាម F 1400/6 ប្រឹ	9158 F .ariawi 40	TOPORE F . 41 Jan 11 - 11 T	i mara ka Las najnan saa	44	TOTAL FE	For the SE The SECTION	# #1 . 15 (515) 67
ไฟค์บวิไ ค์ .16516€ ติรั	#####################################	34 PE - 1393 46 303	000000 € .477766 x05		·	englas Linguis	90 The 84 1000148 001	1 14 14 (14 41)
CT FR .48744E-0∷	08 FF .120056÷03	CW F# .046506+04	00 18 .416138 03	091 FF : le 1354, -61	11 (1) (1) (1) (1) (1) (1) (1) (1) (1) (111 1 F		
OT FA .47200E-02	ОН FF 12314E-93	0: PF' 397958-0.4	(0 PP .4475(E~03	भए PF .447671 मेर्	14%.1.00	1 . 15 13. 135 mm	in tarry see Light Set Int.	
00 FUSE 29132E 00	1902 15-02 1902 15-02	E∺MDA SL .39501E 00	1 F.FOT .32357E 04	11 8.50T .15020F 64	00 H1 . 40% (0.5. %)		BID FRE PENISE ON	AD PEF .N7 0.E 401
Y FUSE .20730E 00	7 5L1MG 40-911111.	140 SL .0400 0E 00	V F.POT .06545€ 02	7 F.PGT .130908.03	THE LEWIS DATE: NO	14 T (17 F)(4T) 17 F (17 F)(4T)		ТНОЕ ВОФ .16619Е И.1
2 FUSE .57500E 03	2 SLING .000000E 00	#####################################	2 F.POT 16916E 05	2 9,801 16446E 05	Z. #1 ~1.30% (\$8.00)	+108 E0D +. B. − (Dat	Turning bi Bile Bub	THOR BOD .18497E 02
L FUSE .21935E 00	L SLIMG .00000E 00	, BAF SL .10000E 01	L F.∺0⊺ +.57985€ 04	U P.F0T .53064E 04	L L TT 165(450) (1	ang seq. 36 361954.	€ HEEF BOD -,,79784F JE	FFF .000000E-00
M PUSE .83695E 03	11 SLING 00 390000.		11 F.POT .33113E 06	11 F.FUT ∼.32503E 06	in Thur The Distriction	TRANTEDO OTHE GA	1040F E001 1911E 04	088 .000.000.000
N FUSE 51131E 00	И StinG 36507E-04		4 F.POT .452⊎3E 05	# 4.80T 45187E 05	H 3.77 , 85 8-00), 164	6188 800 .150 មិគី គឺ1	#IPP 800 14048E m1	FPP .00000F 60
BETA FS 45870E-01	86TA SL +.634466-01	SL WGHT .75000E 04	BETA FP 45603E-01	BETA PP 45611E-01		8188 800 00 807188.	81F9 805 40 6606 00	0FE .000008 -0H
ALPH FS 89685E 00	ALPH SL .14618E 01	J BL .70711E 04				HIR BODY A NORTH OF	PER BRIDGE	
VINTF .41251E 02	THETA SL 49996E 01	L SL .20000E 02			WIPP .000000	7FP B0DY .86545E 02		
WIFS .30554E 02	SMA SL .20000E 02	R SL .80000E 01					AICRR 48381E 00	BICRR .14996E 01
CONTROL ISLING IDOPT PSASO ISTERDY NTROCR ISLITED	1 RSASP 1 RSASP 1 MSTALL 1 NGREAF	<u>7</u> 1 1 1						

TABLE 45.- STATIC TRIM DATA, SLUNG LOAD ATTACHED

 $V_{eq} = 75 \text{ knots, SAS on}$ $\theta_{SL} = -5^{\circ}$

CH-478 TPIM DATA PUN HO. 1

19:07 FEB 22.183

19:07 FEB 22.183				PUN HC	. 1			
	75.0 FT U .0 LBS PPM =	= 75.1 кТ 04.1 н		a r⊤		6 114 50	TG = .0 I	14 PF8 = .9
THET∺ .96231E บัต	PHI 23708E 00	PSI .00 369900.	P .សូសភូស្មា ខណ	ე .აკიმ მნ მ მ	មាល់កាល់[ម៉ាស់	1970 1880 (H-40)	UMEGA ER 146858 N.	
DELB PLT 20113E 01	DEUS P£T .17302F 00	DELP CLT .11521E 08	DELC FLT .494536 01	1518 for 45:001 61	104 × 104 17300 ° -	10 to 300 1114 to	901 1 of 1 of 10 7 of 1	H 1001 1895(H +014
THET0 FP .16310E 03	н16F8 .69526E 00	8107 P 375056 00	া ⊨ন্তি কল .1778ə∭ বড	. 155 175 aug 1 aug	14 1400 (1900)	and the second	100	15.000 s. p 1.0100 lb (4.0
\$16MA FR .66979E-01	91611A PP .869798-01	GAUNA 69 .13574€ 01		०० विश्वपाद हार २०१४ विश्वपाद विश्वपाद	1 - 6 P - 6	. Little in the land	111-13 167-191-00	1800 H. B.C. 11574 F. F. F.
THFUST F .16784E 05	₩0₽ΓΆL F .10106E 04	5176 ह .275326 हर	TOPOUE F 	1 18 9 FF 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 15 II 1 17 17 17 17 17 17 17 17 17 17 17 17 1	1 (146-14) 1 (146-14)	50 (4) (54) (40) (6) (6)	F 18 14 - 1 11
THPUST P .16829E 05	NOPMAL P .23008E 0 3	5196 6 .138496 65	7 730040T 26 160018T.	10 (F. 5 (F. 1)	III DEF EE	1.00 mm	floto Et . 101/70E - 51	1 % E
CT FP .47969E-03	CH FF .28885E-43	077 € P .70700€ +04	# 60 분위 120 42 5명 - 연기	60 FF .43 67 5 - 11	not the Parks to a co	E1 FF 2567 3 01	0 0007 FF 100088 00	
0T PP .48099E-02	CH FF .681046-04	031 P# . 545 9.25 - 64	00 PR .300108 03		941 IS 147107 a s	F1 F6 1 F F1	ig tarsy FE . 117 for ≥05	
% FUSE 89976E 03	.1 Stine5 +.11081E 04	եժի∏≎ն Տե .237888£ մա	17.F6T 160774F-64	1 81.800T 1980115 08	11 * 11 18 8 * * 1		#:[r + + + + + + + + + +	87 34 k 1766 St. 01
7 FUSE .29263E-01	7 3L1MG .59513E 00	NU 3L 60 306606.	Υ Ε.ΡΟΤ .27543E Ω3	: F.F03 13:34:3-03	7 · · · · · · · · · · · · · · · · · · ·	10 for 1 170		1966 (1901) 1967 (1911) st.
Z FUSE .54473E 03	2 SLIMG .00000F 00	MU GL 93736E ∂1	1 F.PDT 167358 65	, 160004f 30°)	2 14 82 130 10	. 110 (FeB)	Bill Dir Commod Hi	100 k (n.) 1770k - E.
L FUSE ⇒.37878E 02	L SLIMG 00 300000.	F 8AF 3L .10103E 01	4. 8.807 .754584. 83	L. P.FOT Astibut. 01	1 1777 197 (130 a)	97 (194) 	LHER E (D) . 1 (97778) 0.1	1973 18 1013 - 041
M FWSE 33383E 04	7H SCING 00 300000.		# F.FOT .33400F ⊕F	(1 P.PO) 320308 06	11 f77 .530 M 01	180 F F W , at, or , F = 0.4	1007 FBH 1 200 JUST 1200	। १५८ , महराजा (चित्र)
N FUSE 68114E 02	N SLING 59513E 00		N F.POT .29250E A5	H €.POT 29181E 05	H 137 .16007(€)	ния ког .307:18 01	6.26% E006 .45.46 (£ 196)	i Fig. , romanos junt
BETA FS 39957E-02	BETA SL 39958E-02	SL WGHT .75000E 04	BETA FP 463486-02	HE THE FIRE 		1168 END 1688 DI	ENTER TOO.	មាន» ព្រះសម្បាញ
ALPH FS 34430E 01	ALPH SL 403736 01	J SL .77711E 04				98 F B) I% . 103 O E 04	HER BODG .03827E OS	
VINTF .94761E 01	THETA SL 49996E 01	L SL .20000E 02			991U CG 3000 00.	YER BODY .27543D 03	YPF BODY .13851E 03	
WIFS →.97545E 01	SMA SL .20000E 02	R SL .80000E 01					AICRR .34181E+01	BICRR .26250E 01
CONTRO ISLING IDERT RSASO ISTEADY NTROCR ISLTRM	1 PSASP. 1 PSASR 1 NSTALL 1 NGPEFF (f 1 1						

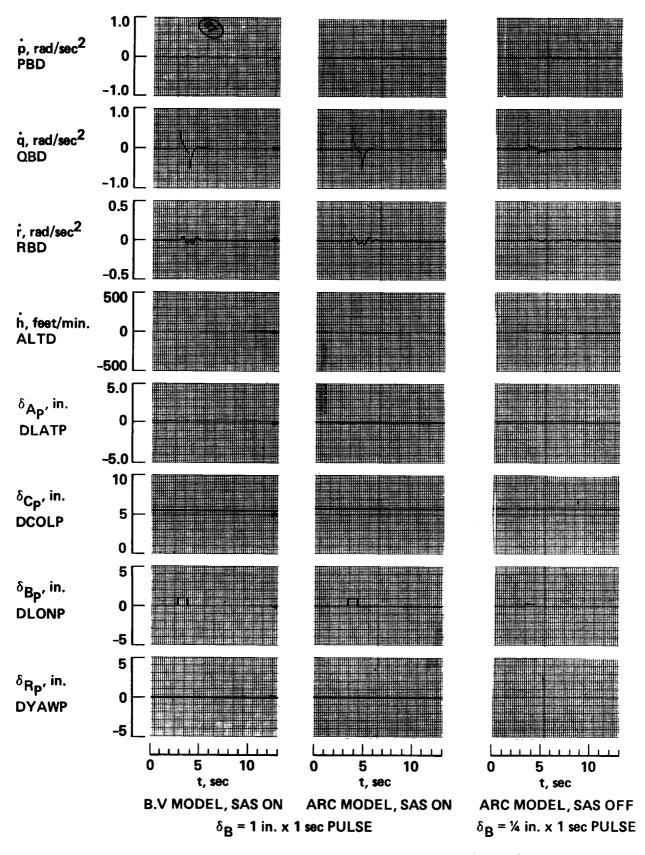


Figure 1.- BV versus ARC simulation response data; hover.

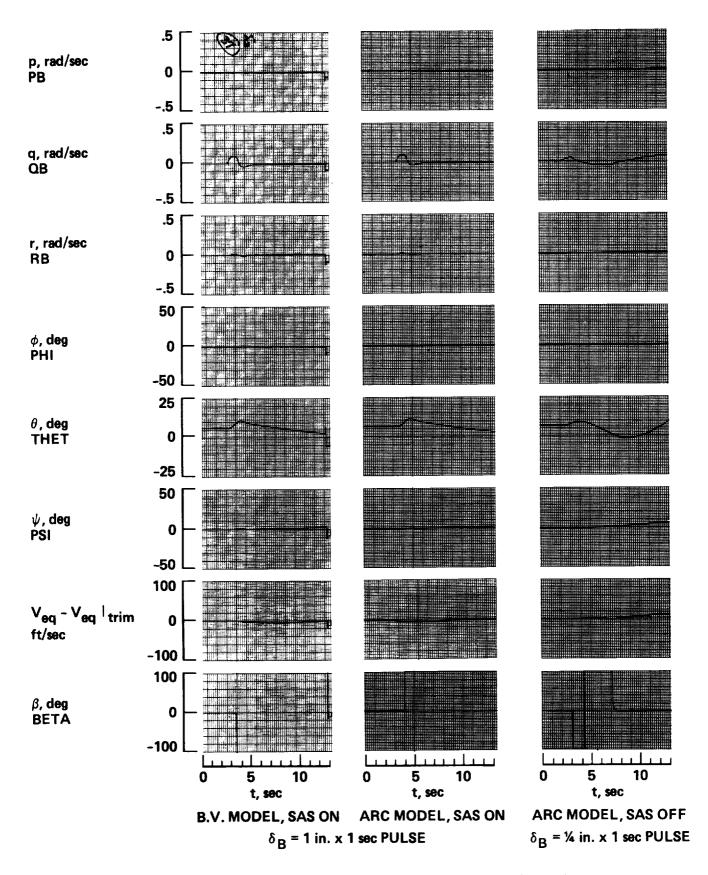


Figure 2.- BV versus ARC simulation response data; hover.

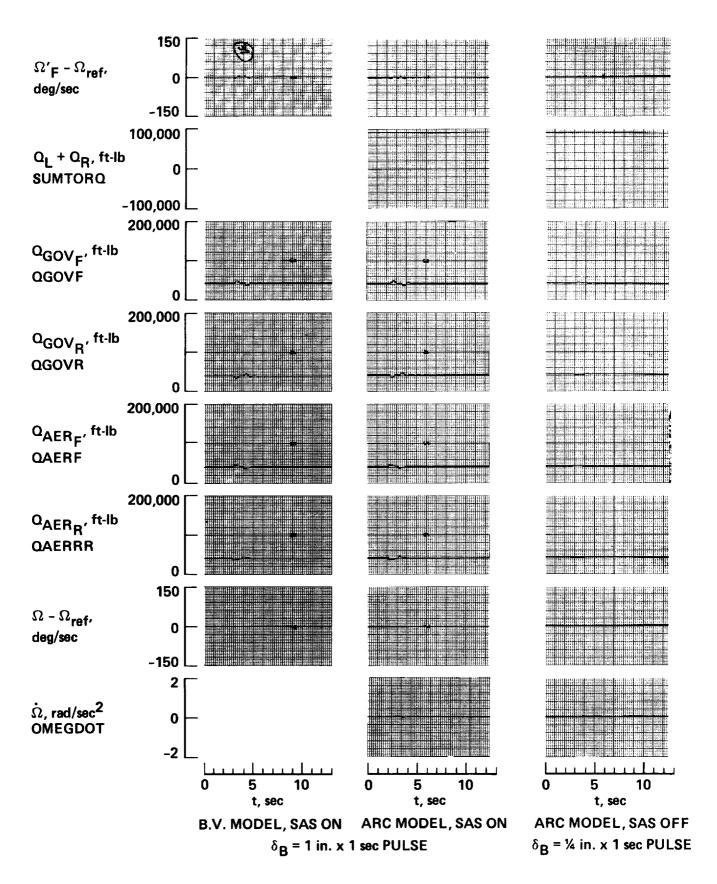


Figure 3.- BV versus ARC simulation response data; hover.

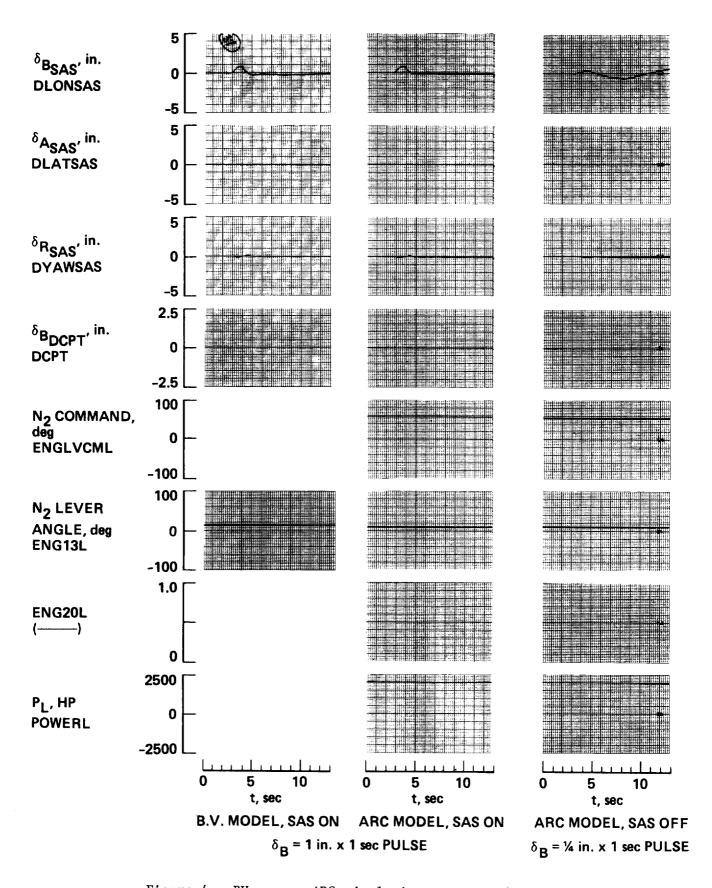


Figure 4.- BV versus ARC simulation response data; hover.

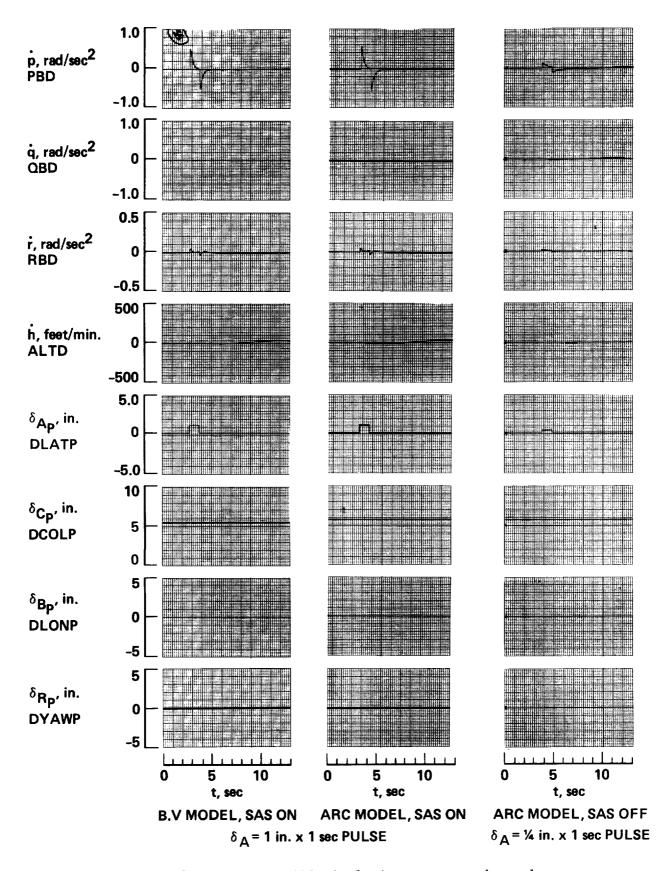


Figure 5.- BV versus ARC simulation response data; hover.

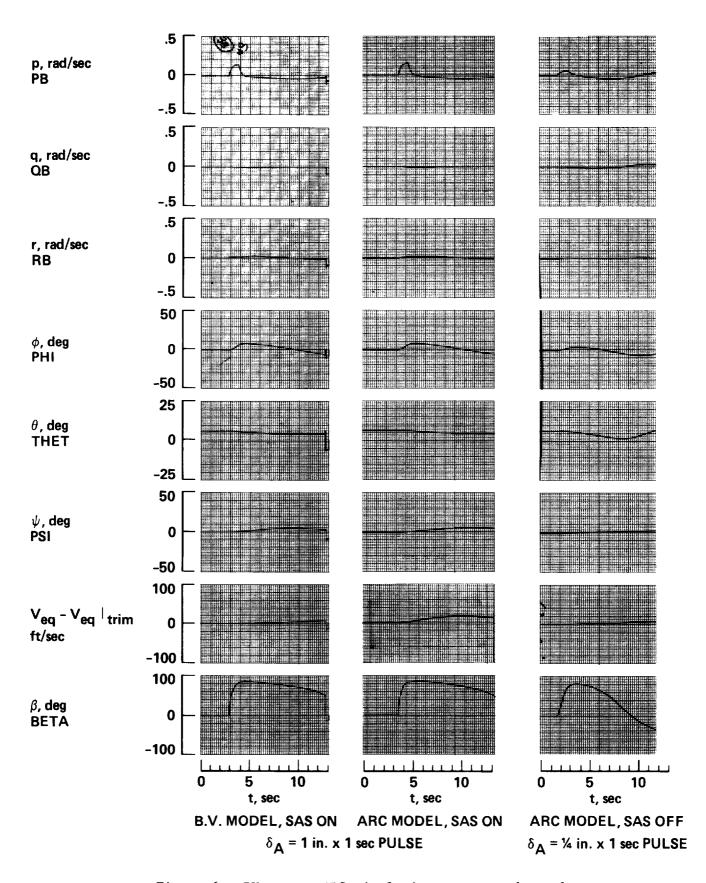


Figure 6.- BV versus ARC simulation response data; hover.

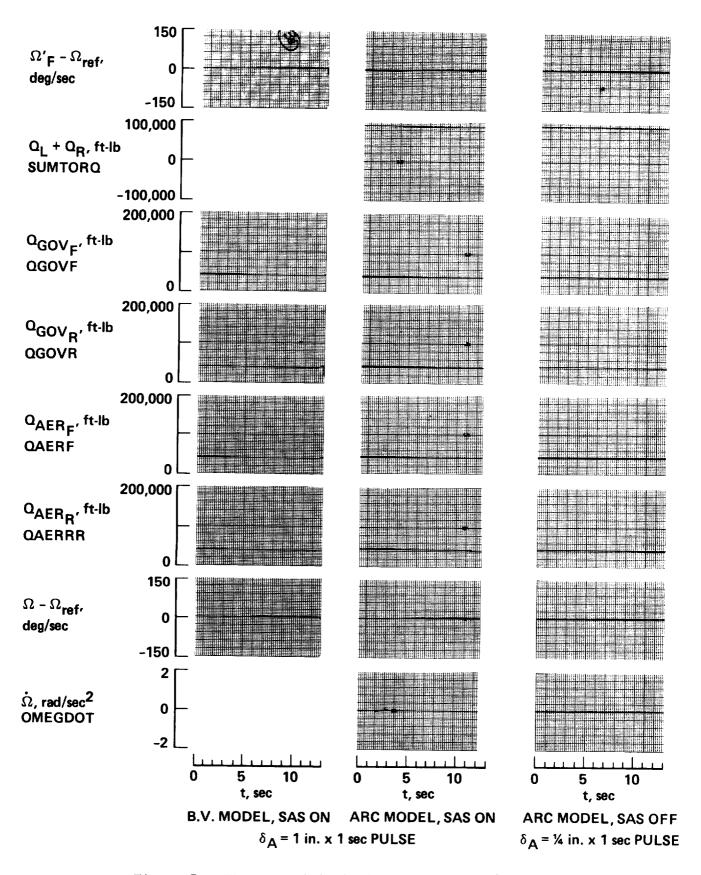


Figure 7.- BV versus ARC simulation response data; hover.

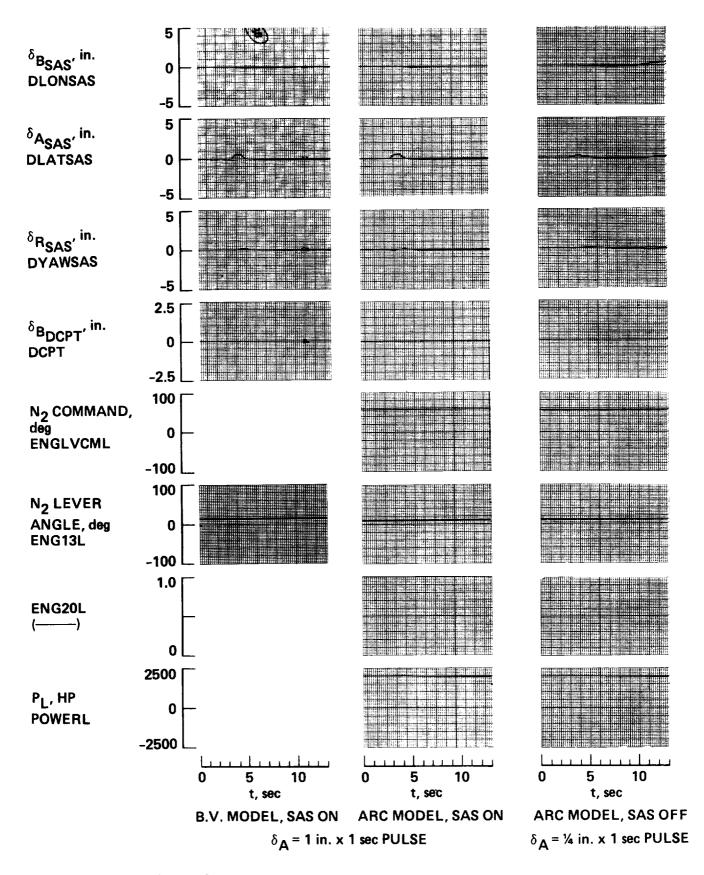


Figure 8.- BV versus ARC simulation response data; hover.

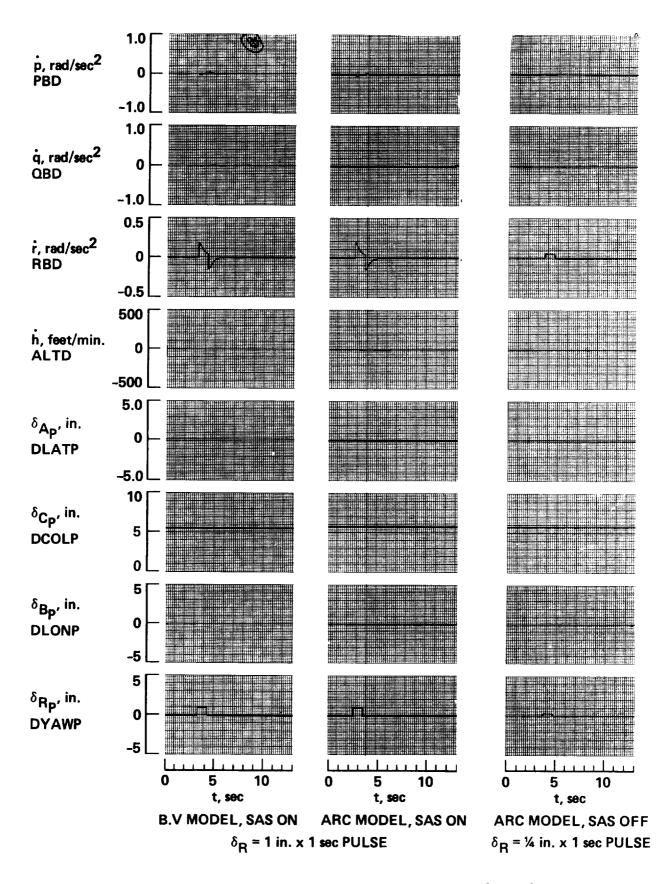


Figure 9.- BV versus ARC simulation response data; hover.

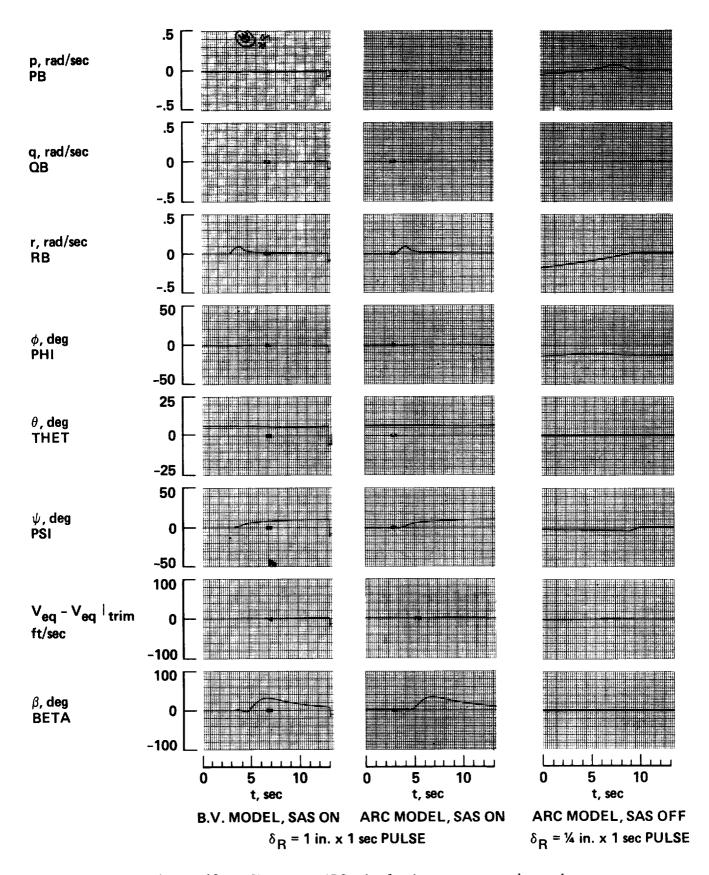


Figure 10.- BV versus ARC simulation response data; hover.

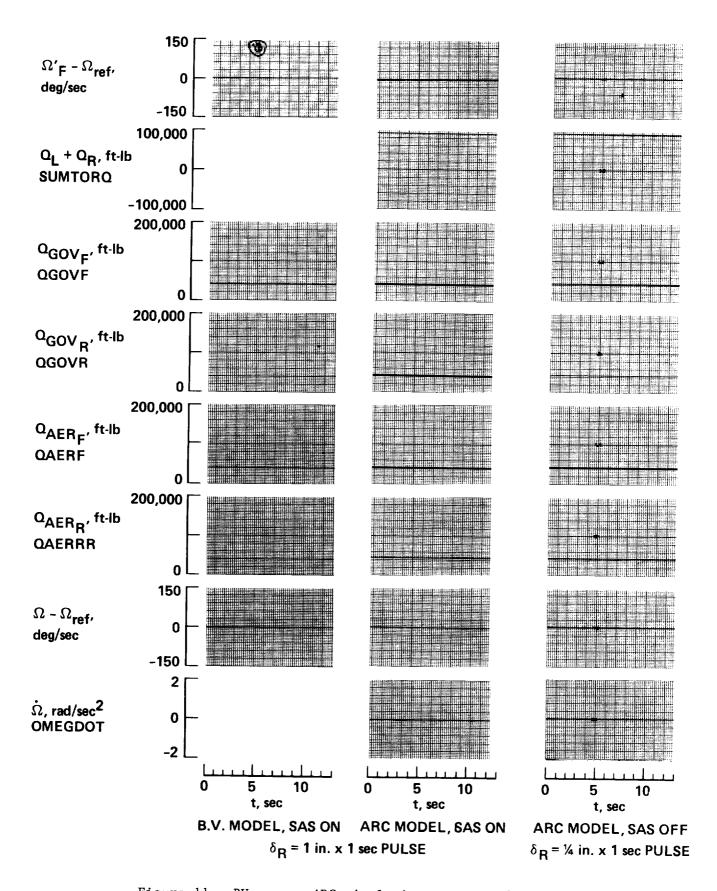


Figure 11.- BV versus ARC simulation response data; hover.

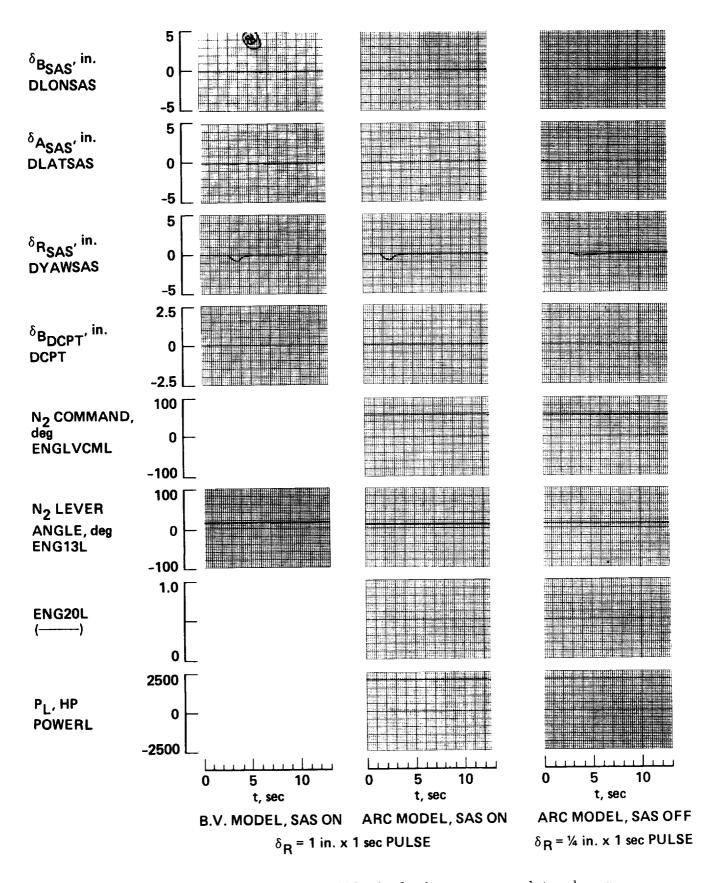


Figure 12.- BV versus ARC simulation response data; hover.

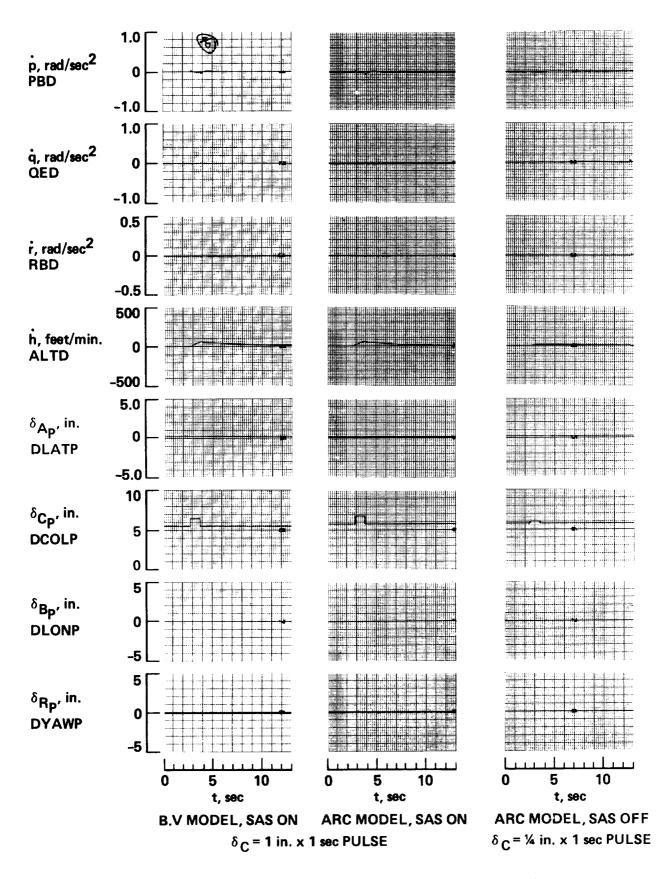


Figure 13.- BV versus ARC simulation response data; hover.

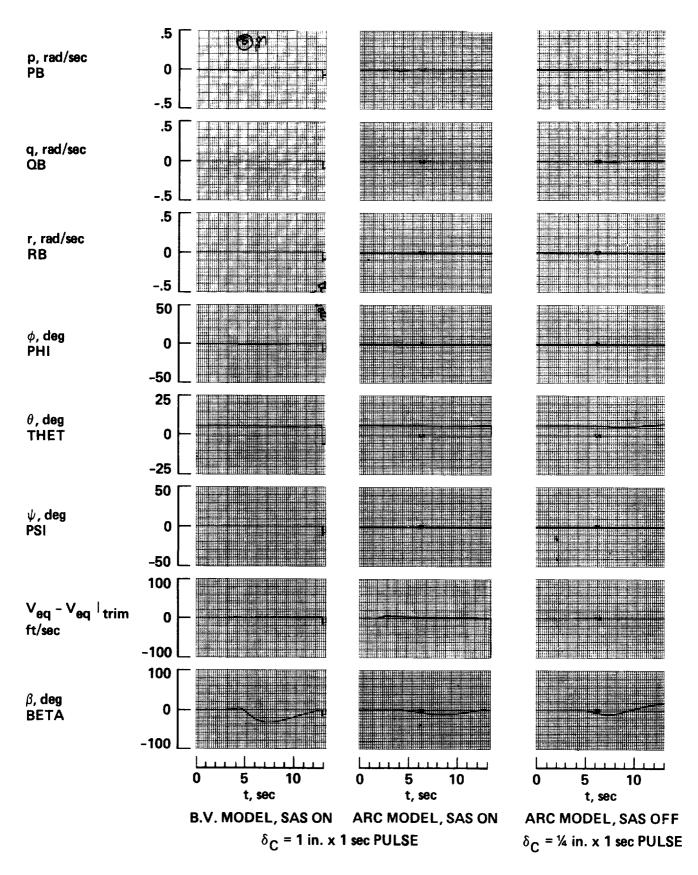


Figure 14.- BV versus ARC simulation response data; hover.

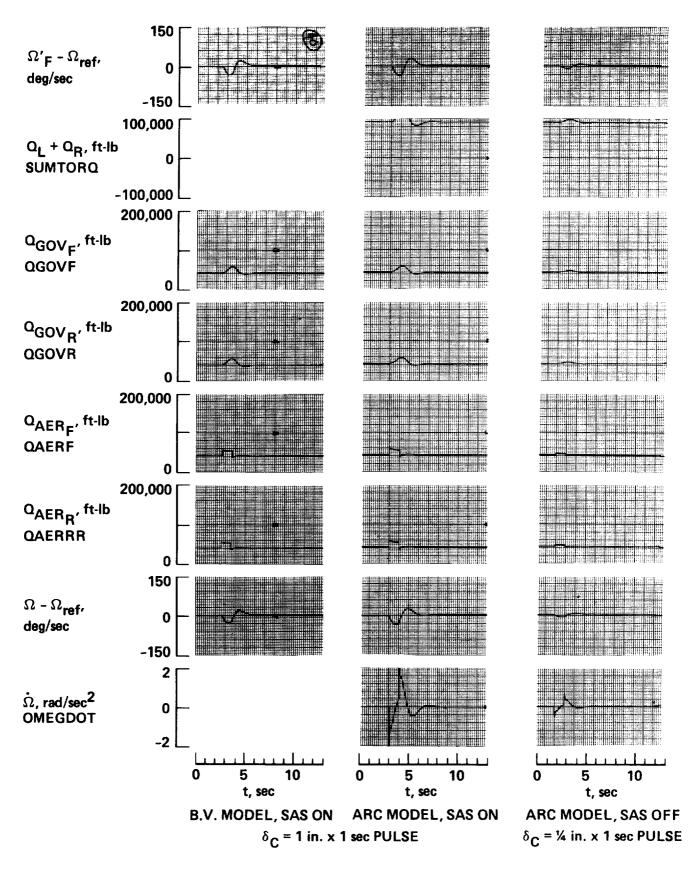


Figure 15.- BV versus ARC simulation response data; hover.

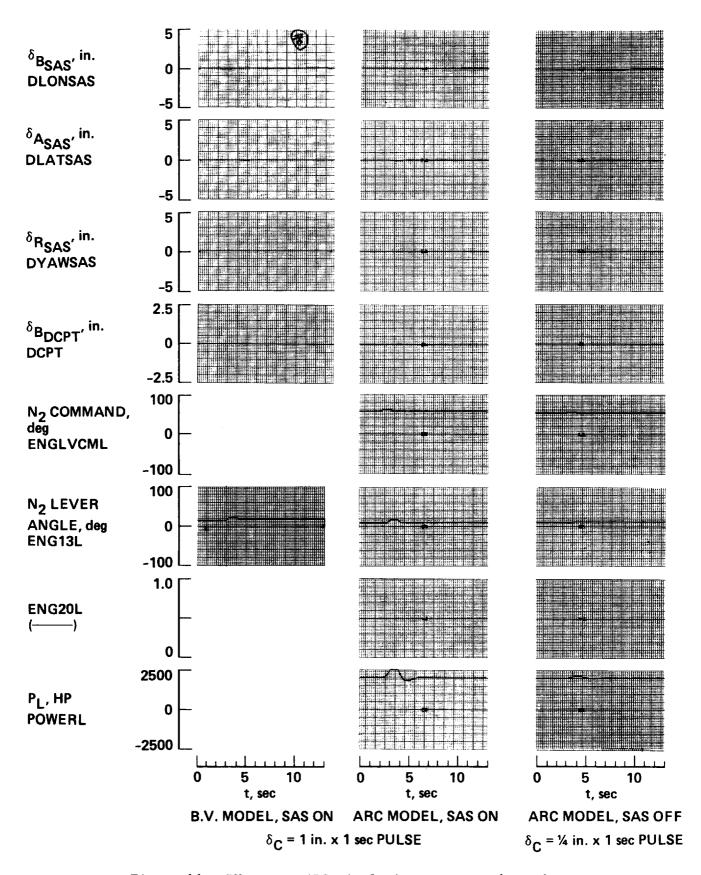


Figure 16.- BV versus ARC simulation response data; hover.

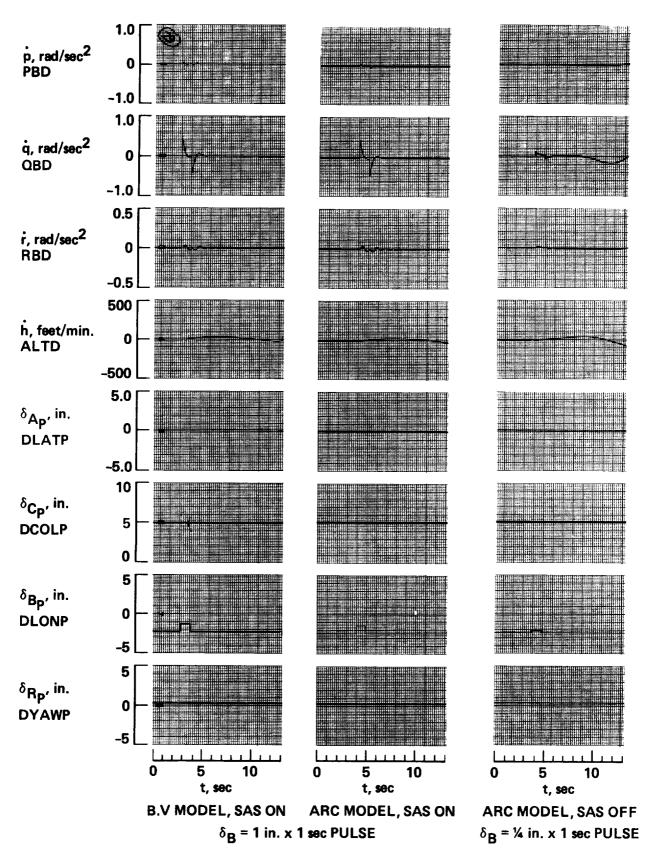


Figure 17.- BV versus ARC simulation response data; $V_{eq} = 40$ knots.

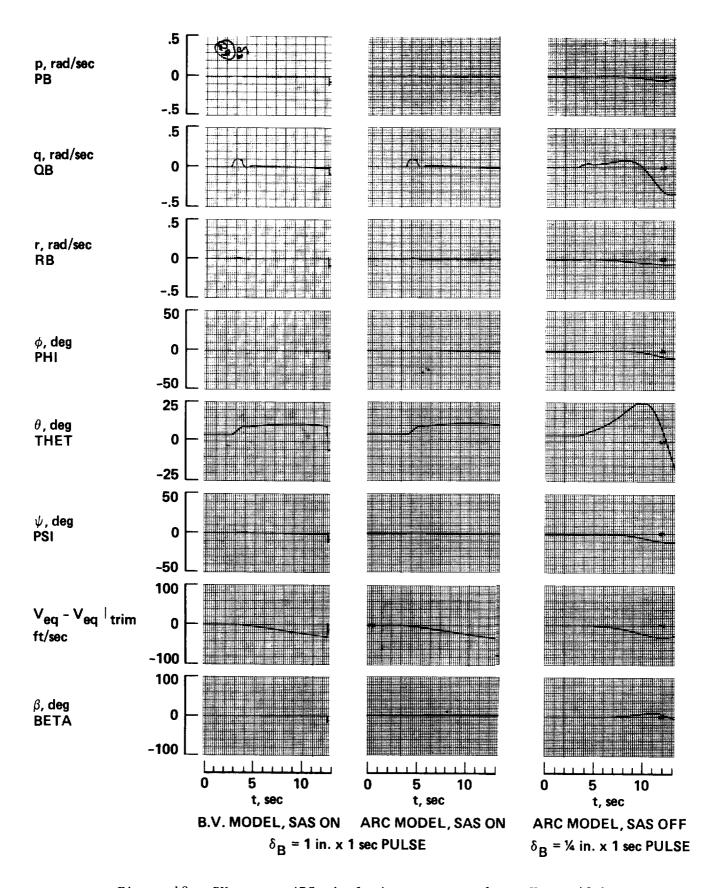


Figure 18.- BV versus ARC simulation response data; $V_{eq} = 40$ knots.

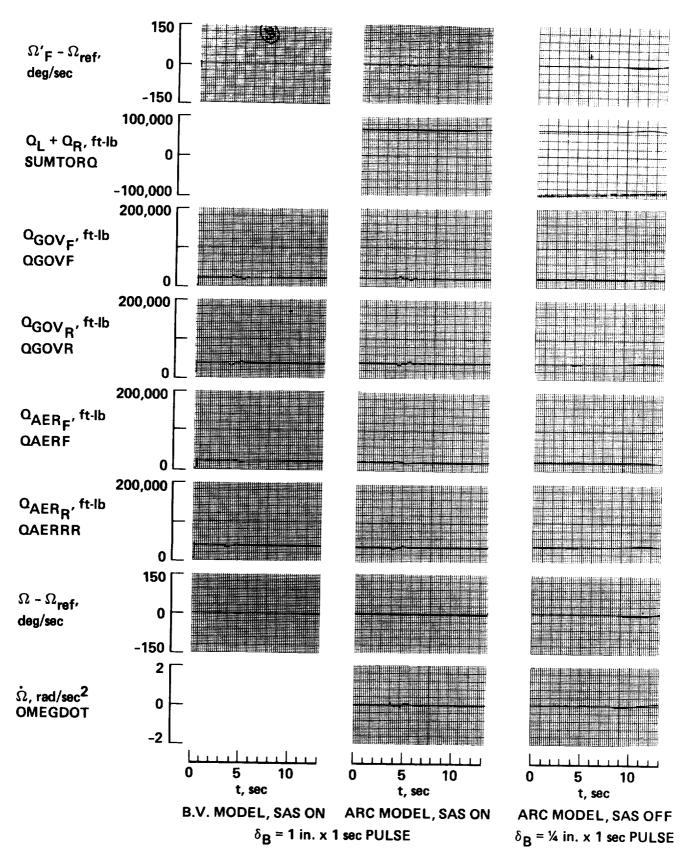


Figure 19.- BV versus ARC simulation response data; $V_{eq} = 40$ knots.

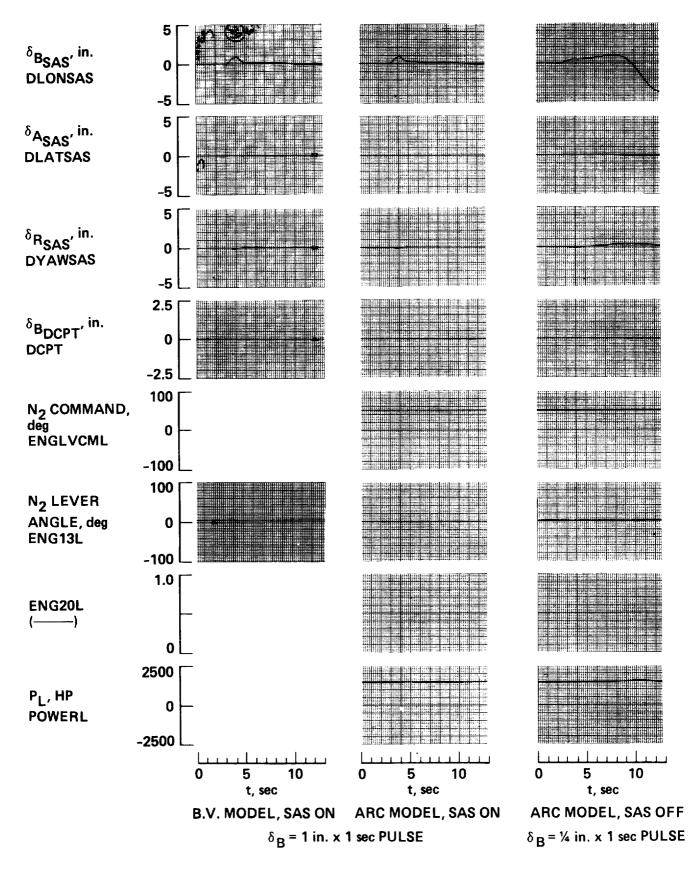


Figure 20.- BV versus ARC simulation response data; V_{eq} = 40 knots.

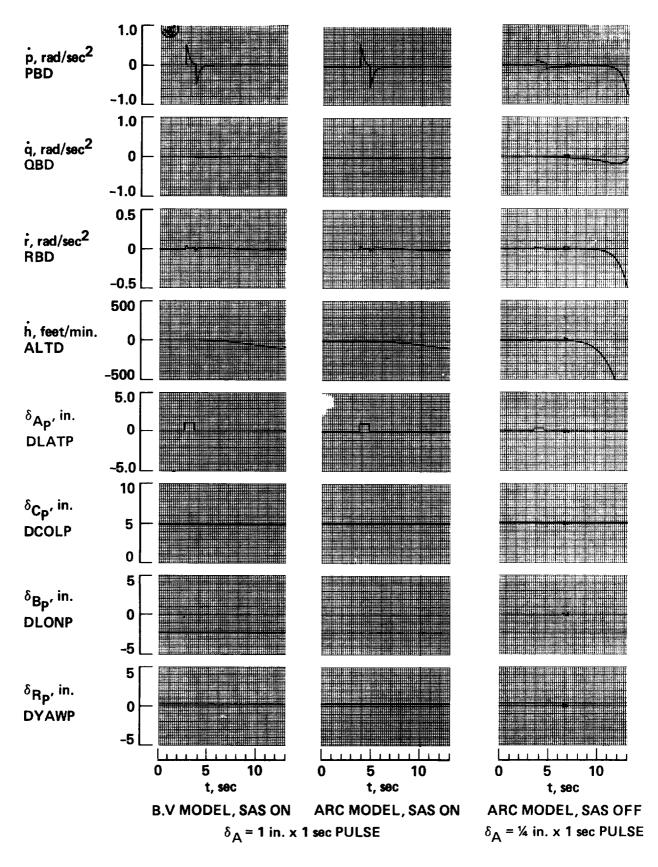


Figure 21.- BV versus ARC simulation response data; V_{eq} = 40 knots.

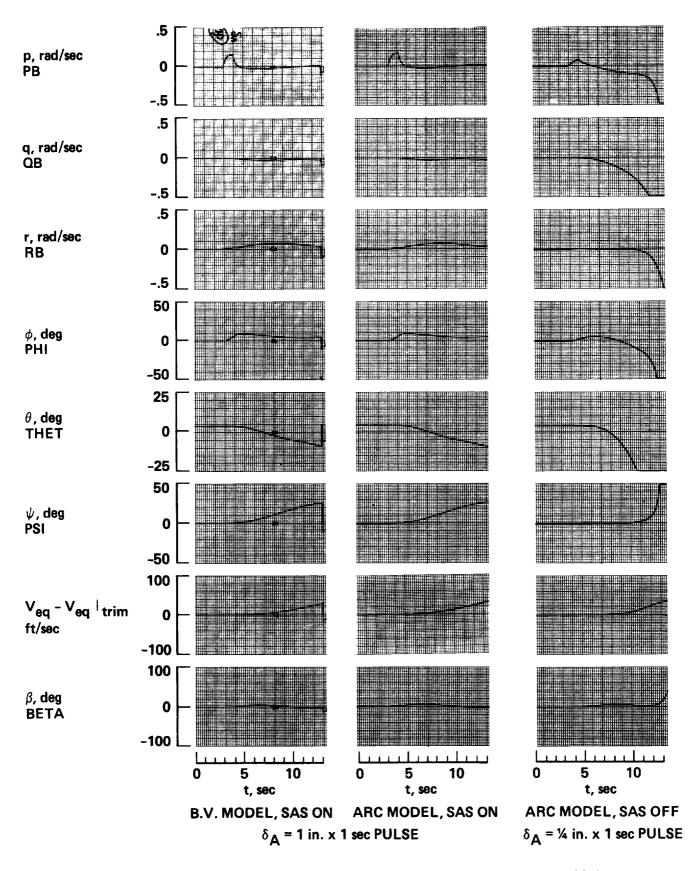


Figure 22.- BV versus ARC simulation response data; $V_{eq} = 40$ knots.

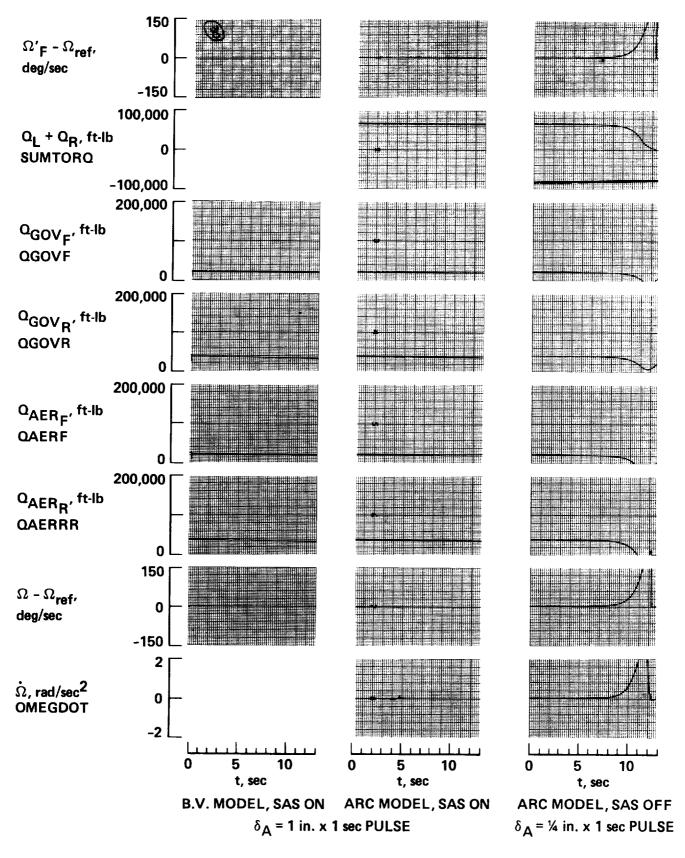


Figure 23.- BV versus ARC simulation response data; $V_{eq} = 40$ knots.

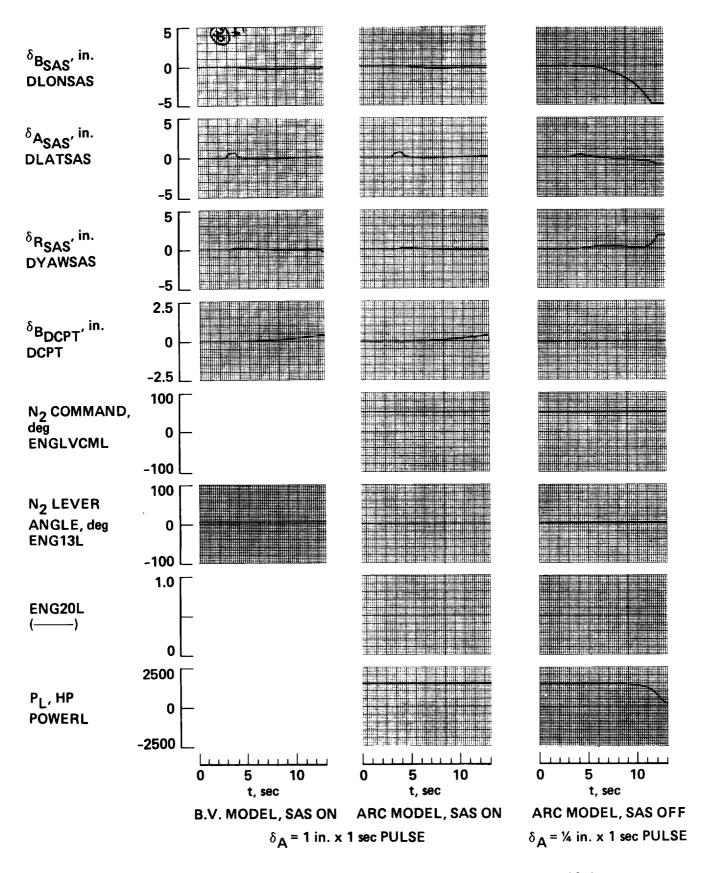


Figure 24.- BV versus ARC simulation response data; $V_{eq} = 40$ knots.

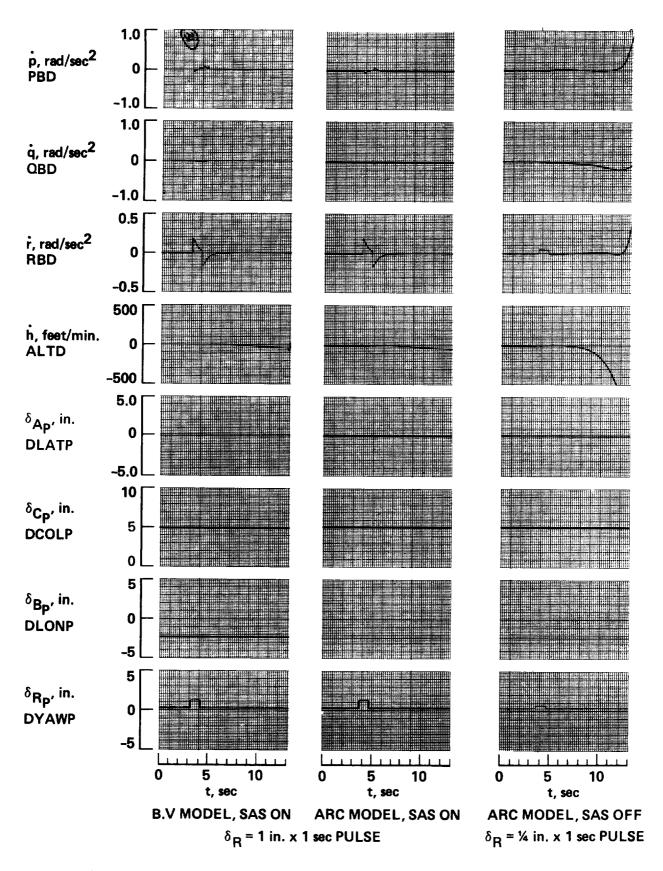


Figure 25.- BV versus ARC simulation response data; $V_{eq} = 40$ knots.

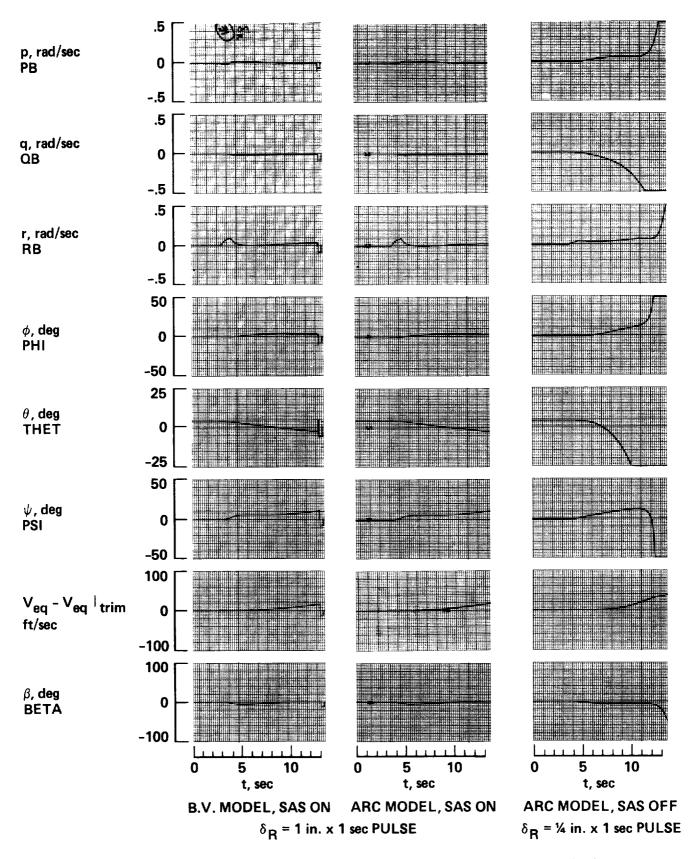


Figure 26.- BV versus ARC simulation response data; $V_{eq} = 40$ knots.

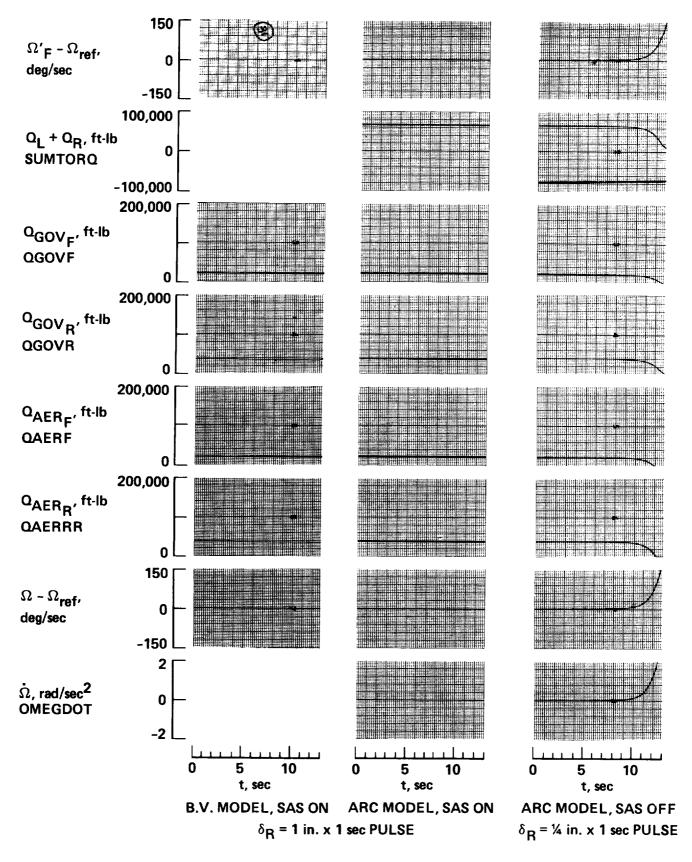


Figure 27.- BV versus ARC simulation response data; V_{eq} = 40 knots.

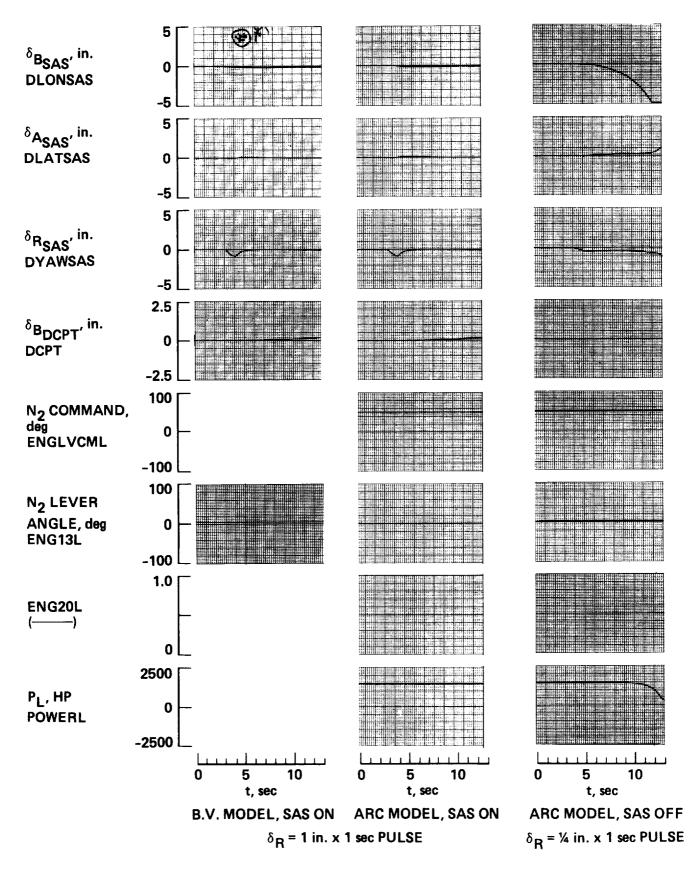


Figure 28.- BV versus ARC simulation response data; V_{eq} = 40 knots.

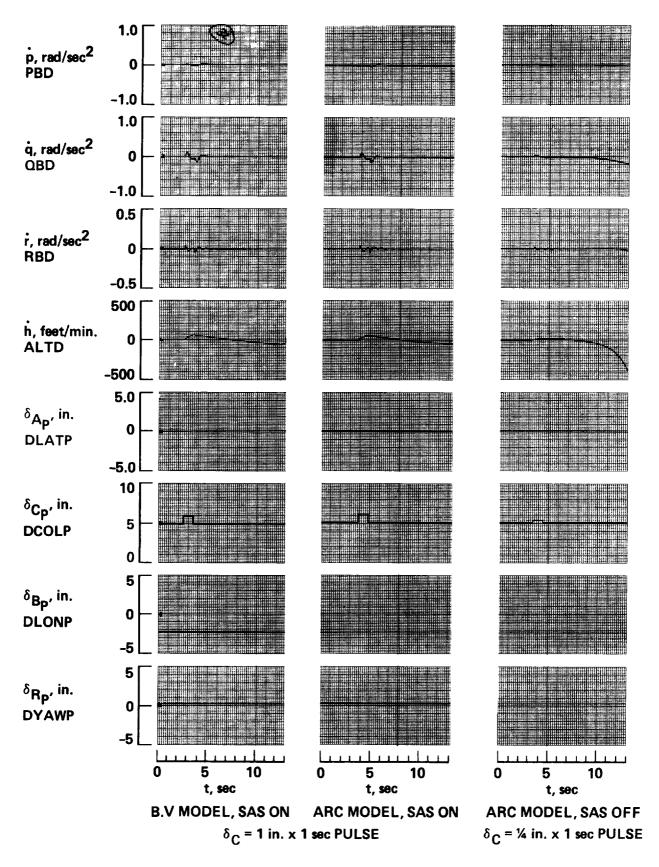


Figure 29.- BV versus ARC simulation response data; $V_{eq} = 40$ knots.

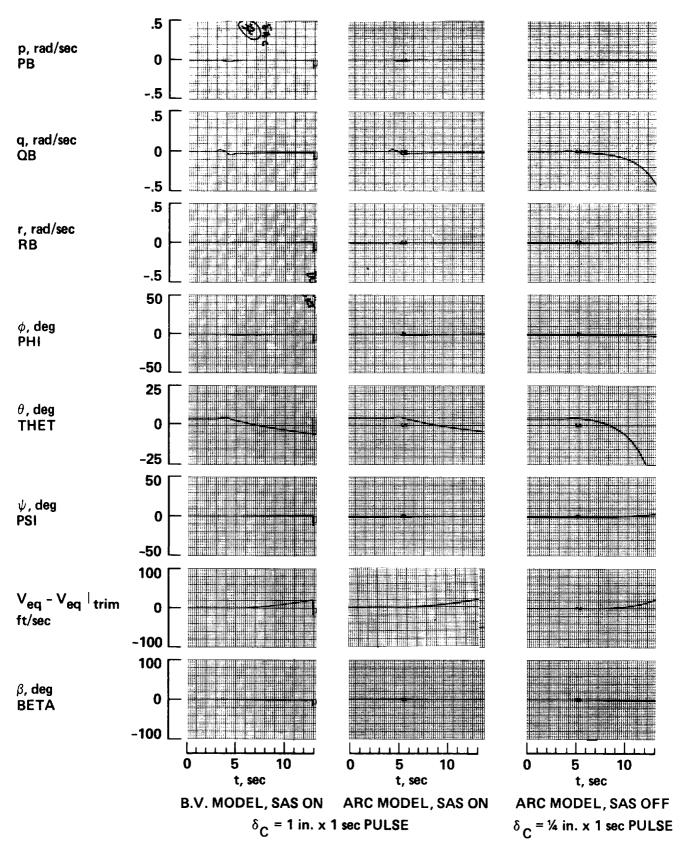


Figure 30.- BV versus ARC simulation response data; V_{eq} = 40 knots.

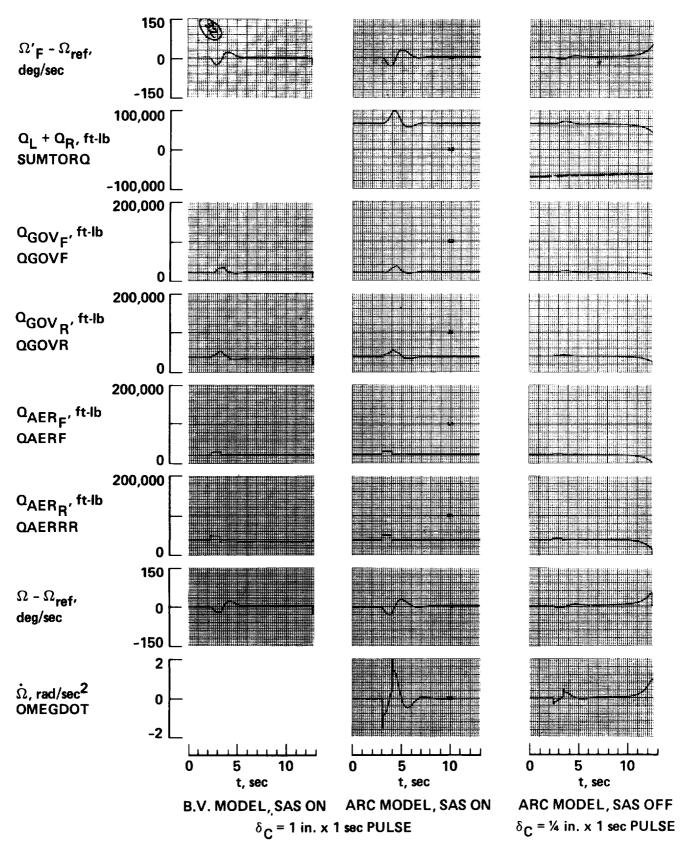


Figure 31.- BV versus ARC simulation response data; $V_{eq} = 40$ knots.

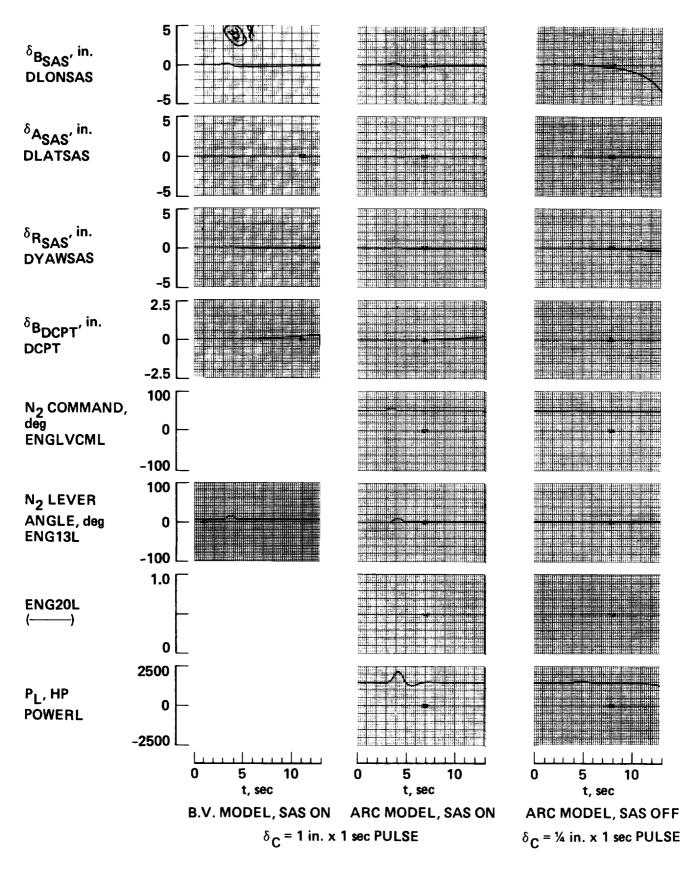


Figure 32.- BV versus ARC simulation response data; V_{eq} = 40 knots.

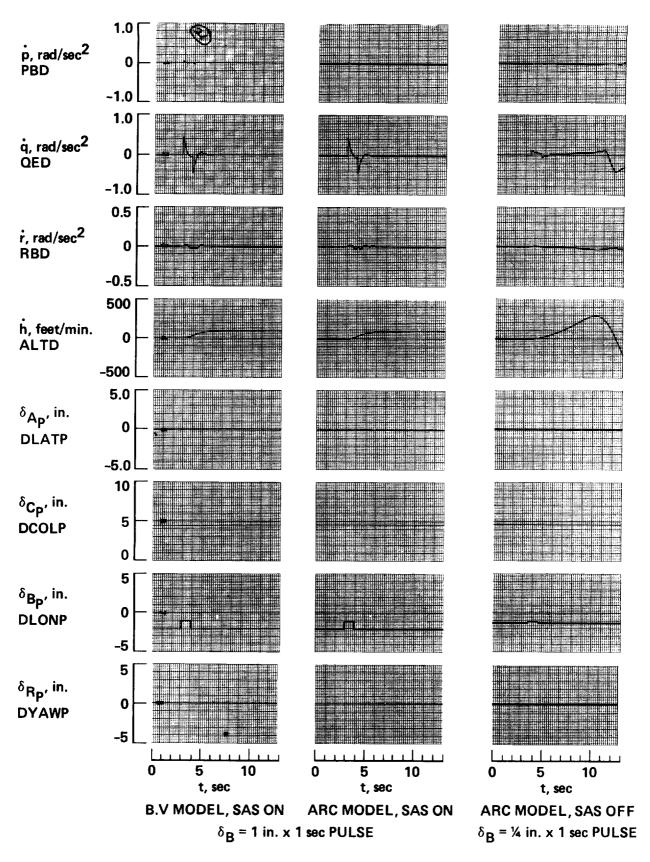


Figure 33.- BV versus ARC simulation response data; $V_{eq} = 75$ knots.

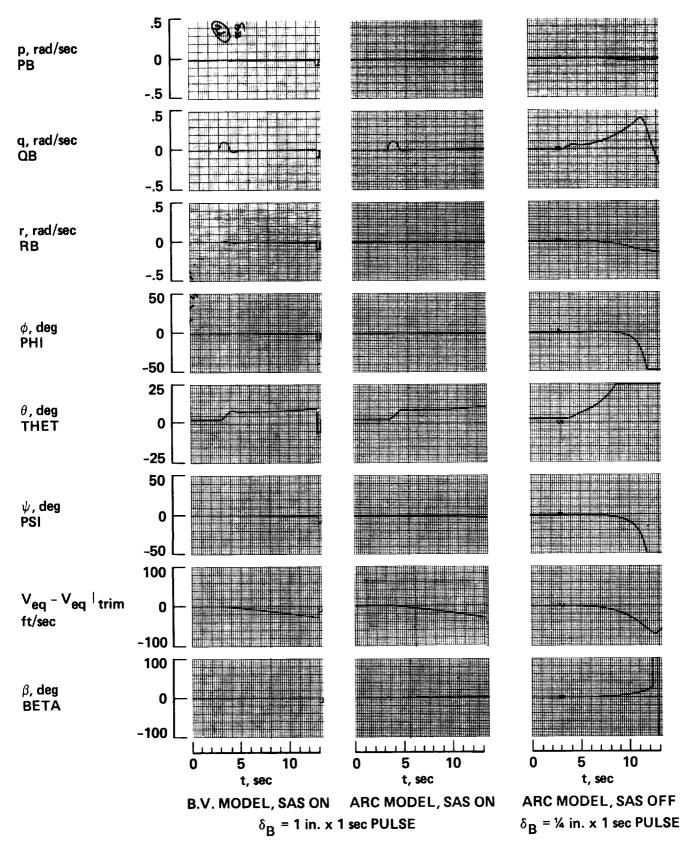


Figure 34.- BV versus ARC simulation response data; $V_{eq} = 75$ knots.

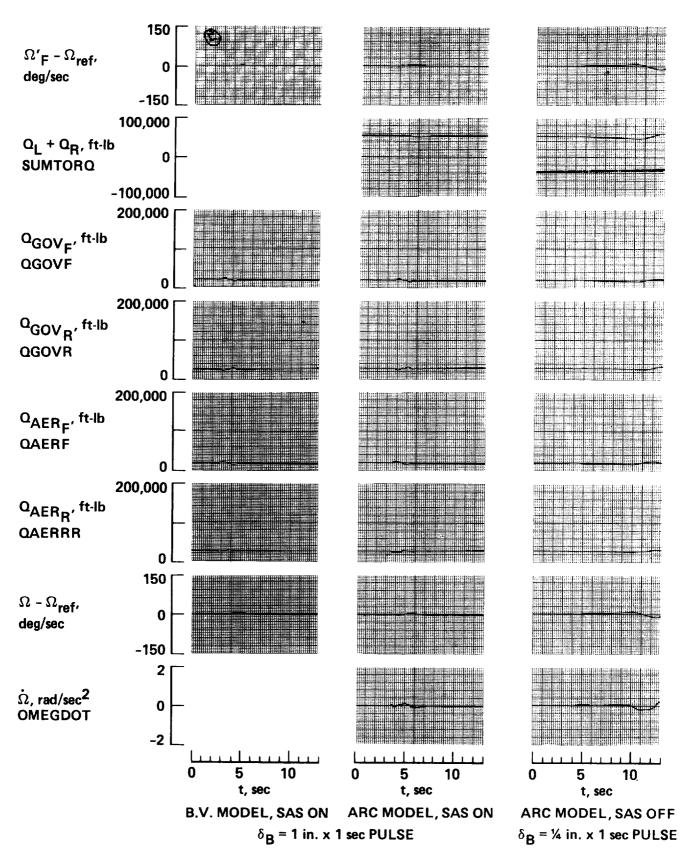


Figure 35.- BV versus ARC simulation response data; V_{eq} = 75 knots.

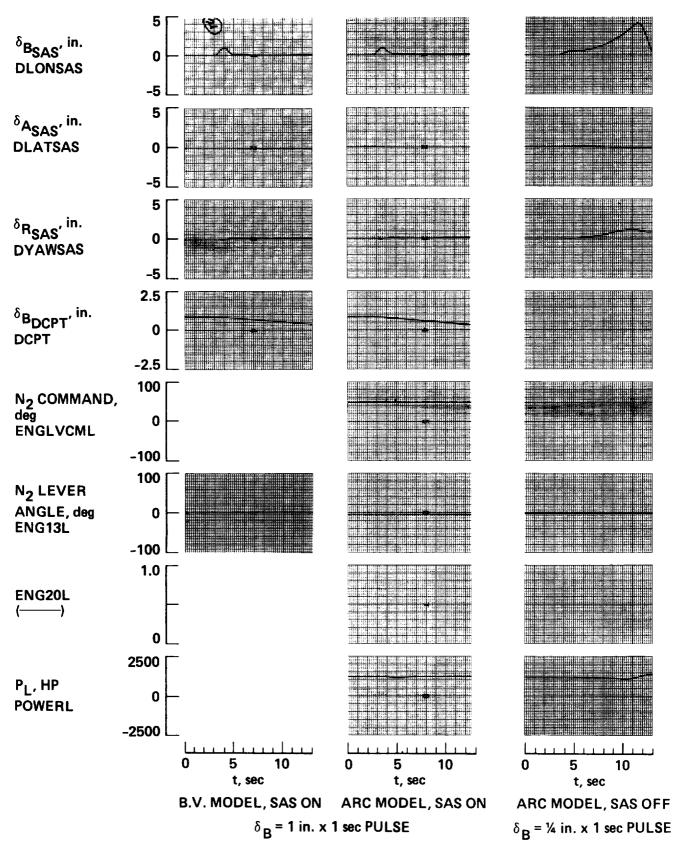


Figure 36.- BV versus ARC simulation response data; $V_{eq} = 75$ knots.

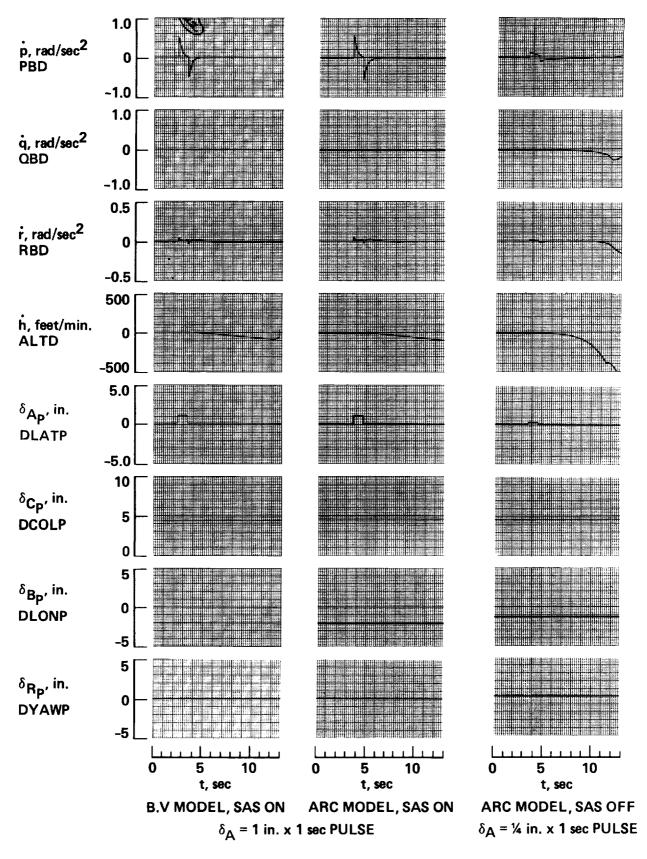


Figure 37.- BV versus ARC simulation response data; V_{eq} = 75 knots.

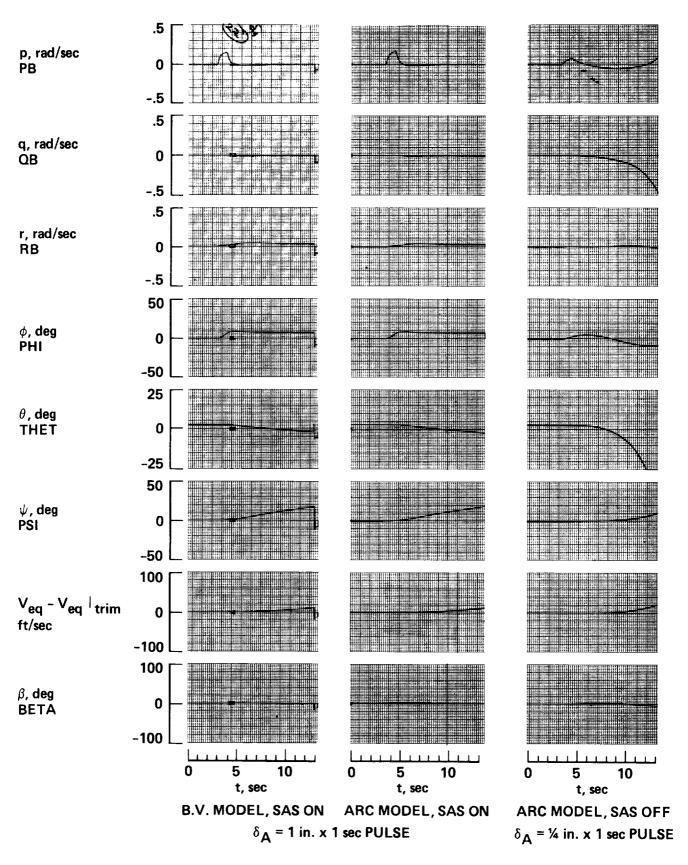


Figure 38.- BV versus ARC simulation response data; $V_{eq} = 75$ knots.

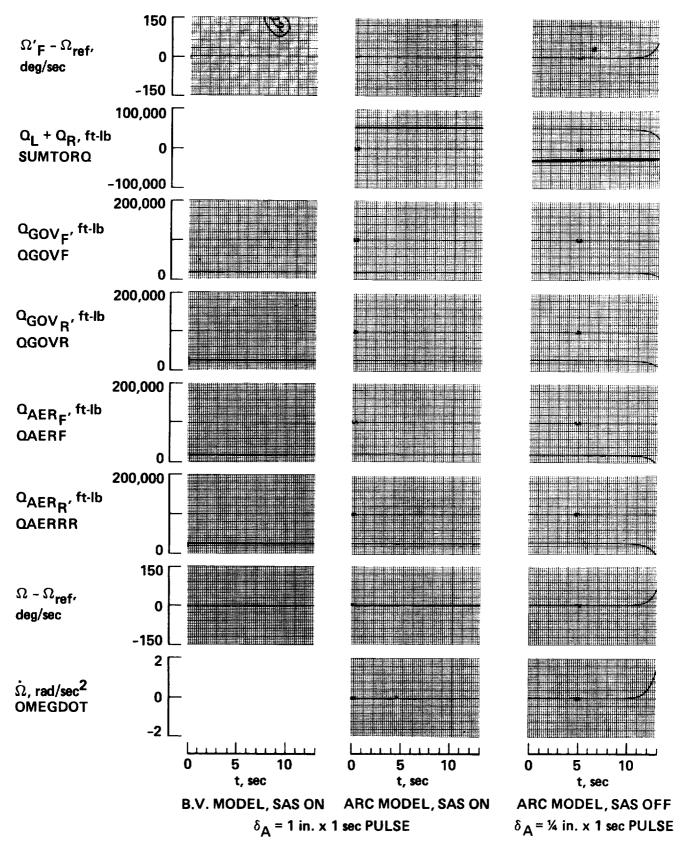


Figure 39.- BV versus ARC simulation response data; $V_{eq} = 75$ knots.

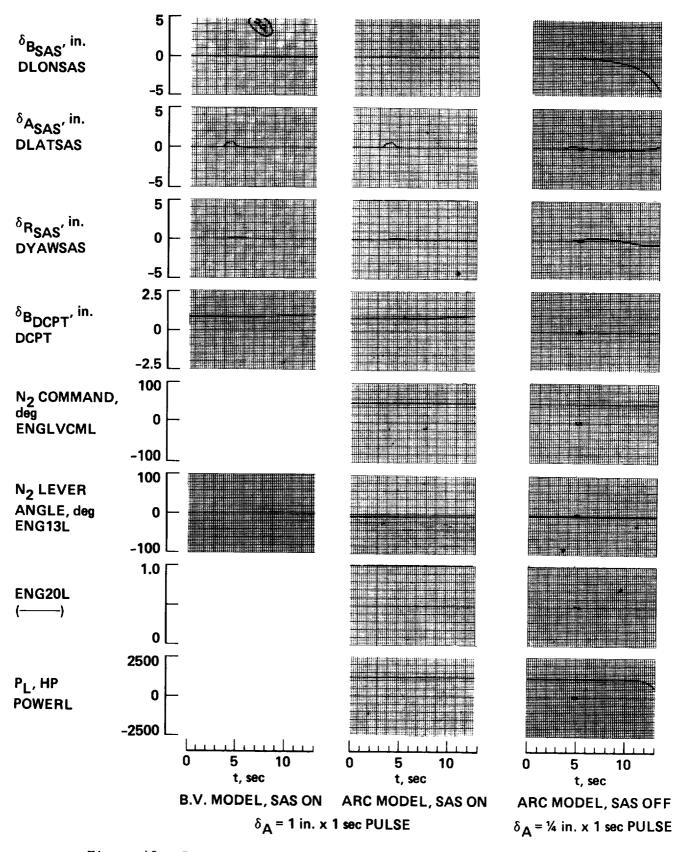


Figure 40.- BV versus ARC simulation response data; $V_{eq} = 75$ knots.

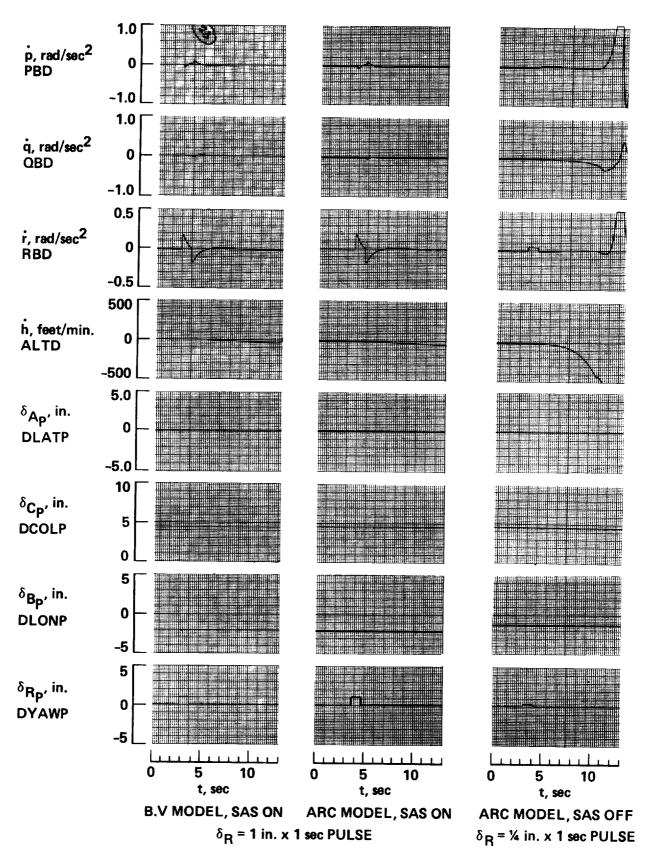


Figure 41.- BV versus ARC simulation response data; $V_{eq} = 75$ knots.

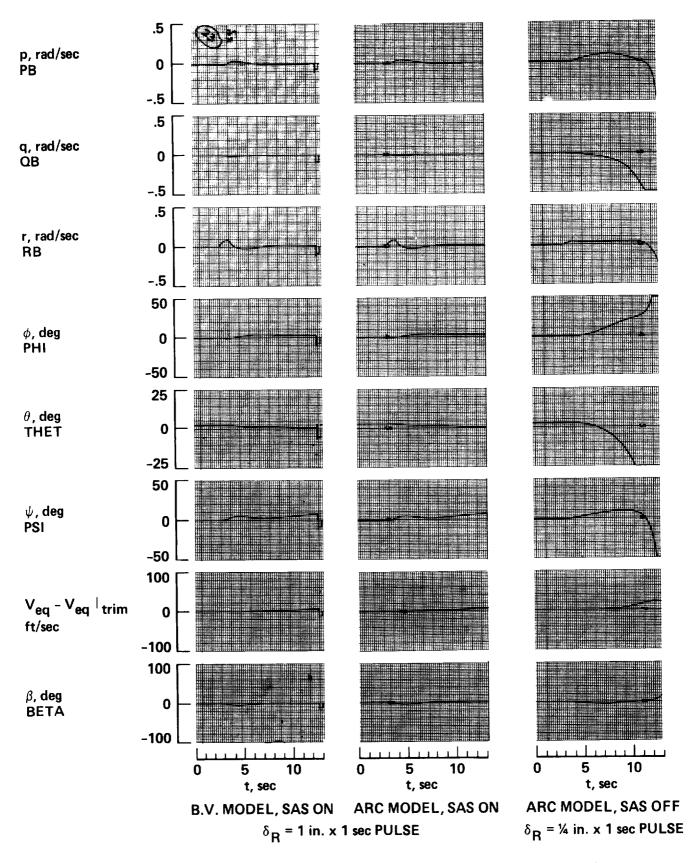


Figure 42.- BV versus ARC simulation response data; $V_{eq} = 75$ knots.

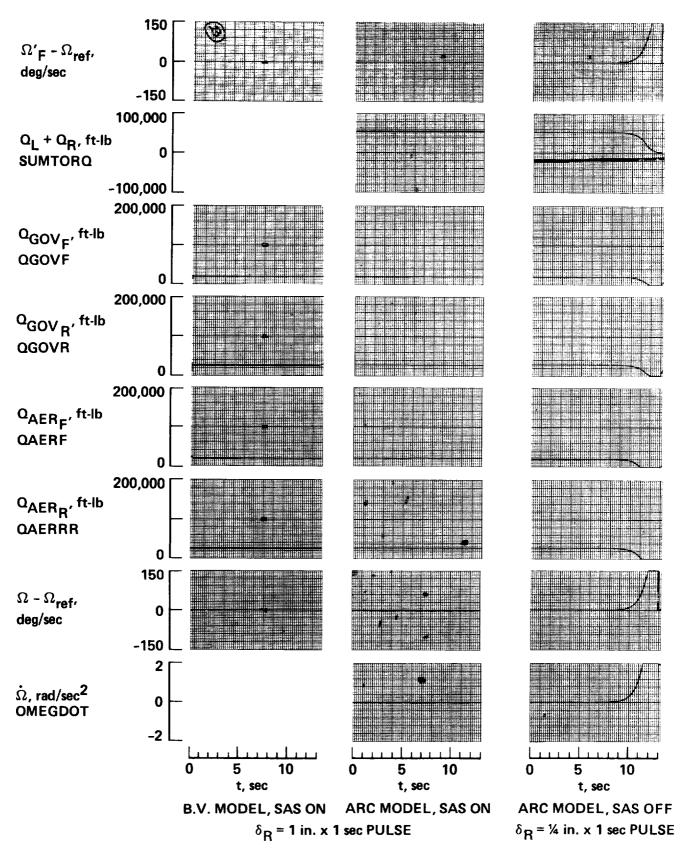


Figure 43.- BV versus ARC simulation response data; $V_{eq} = 75$ knots.

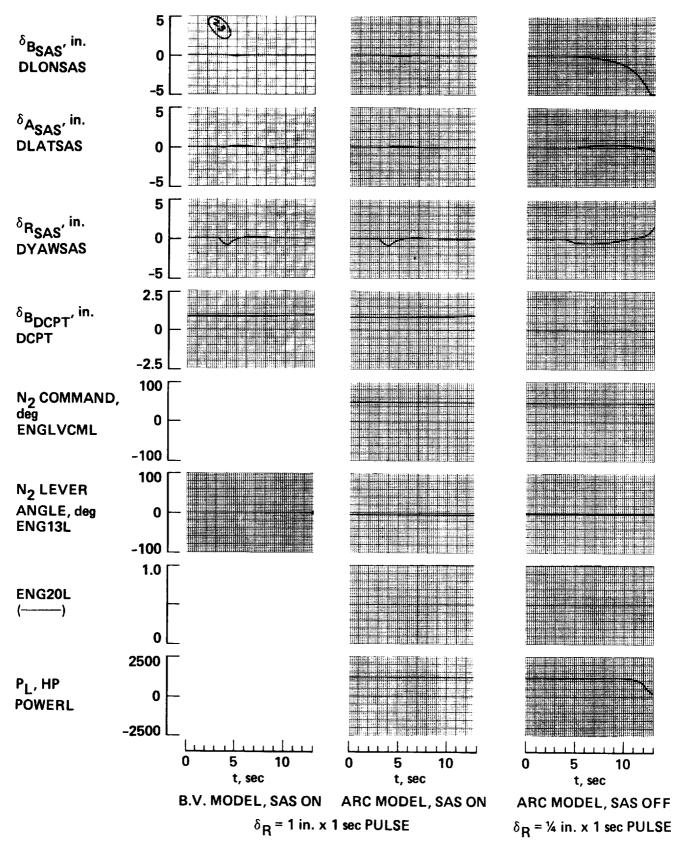


Figure 44.- BV versus ARC simulation response data; $V_{eq} = 75$ knots.

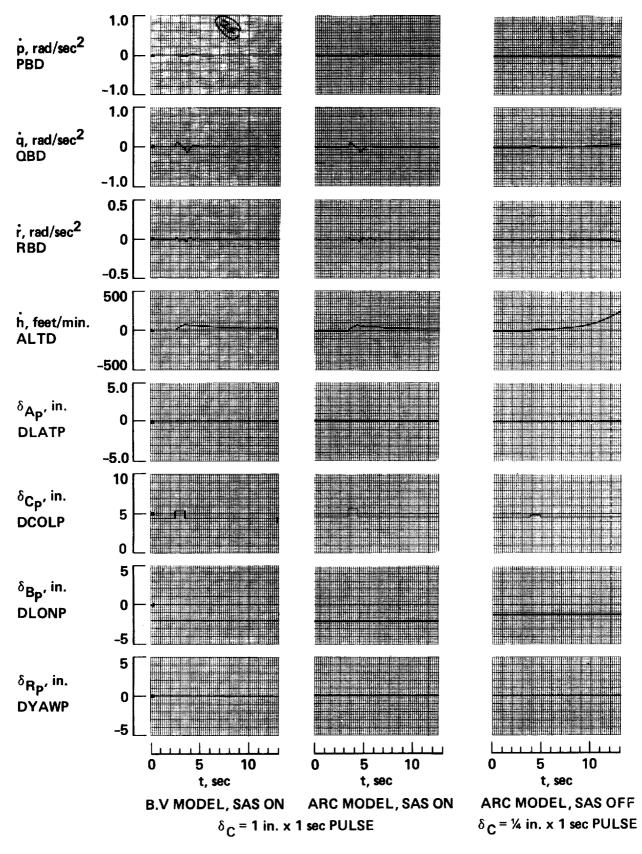


Figure 45.- BV versus ARC simulation response data; V_{eq} = 75 knots.

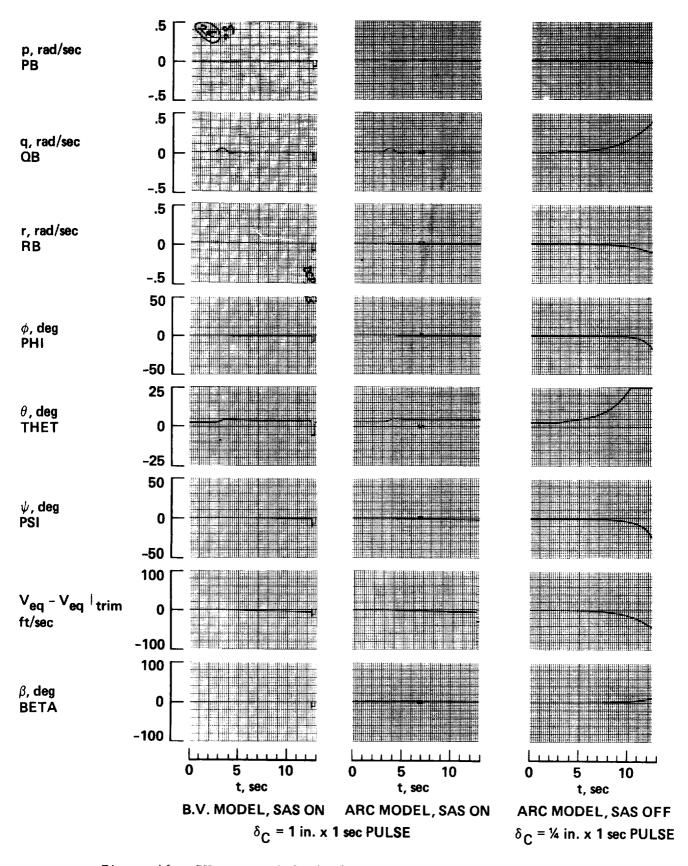


Figure 46.- BV versus ARC simulation response data; $V_{eq} = 75$ knots.

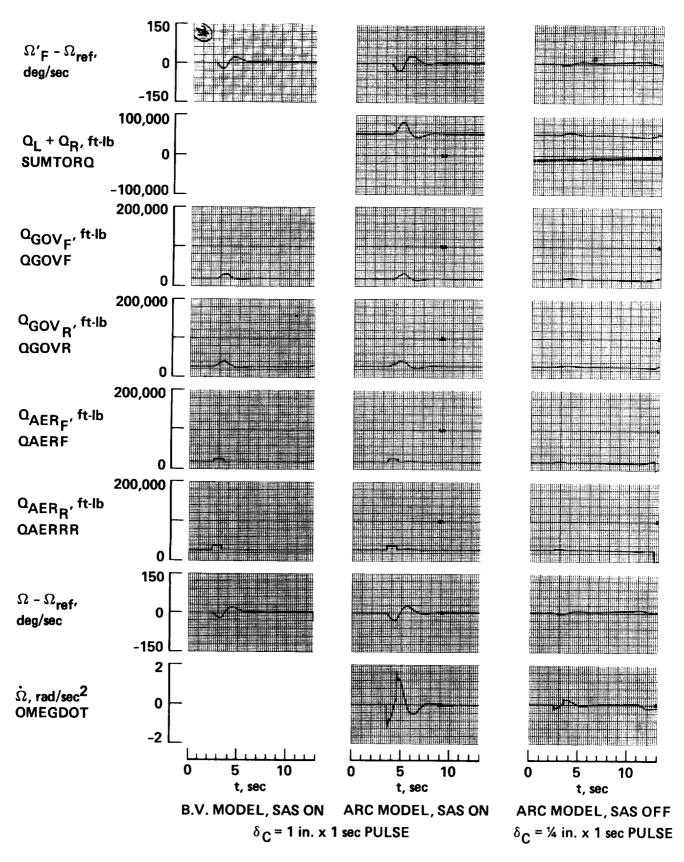


Figure 47.- BV versus ARC simulation response data; $V_{eq} = 75 \text{ knots}$.

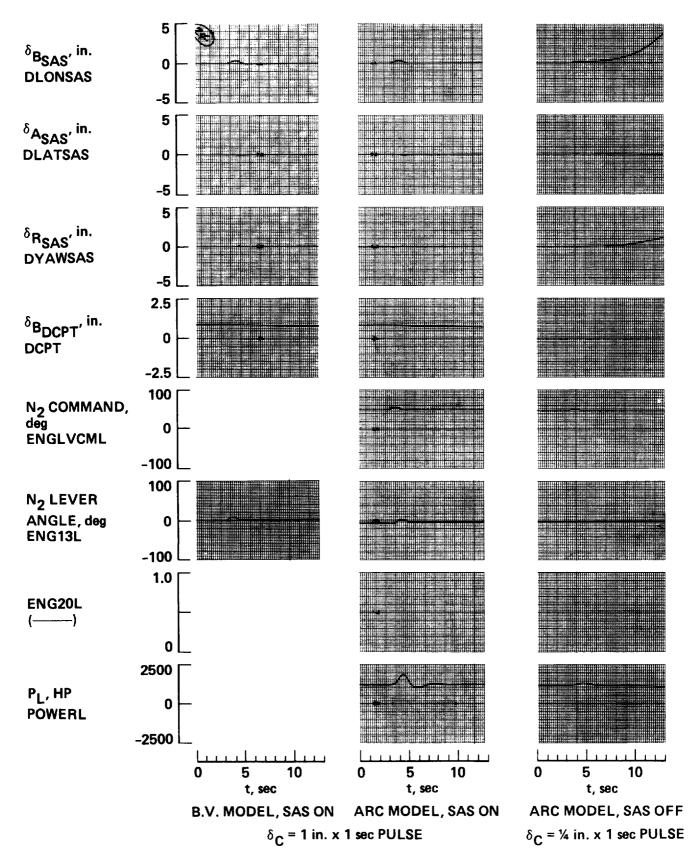


Figure 48.- BV versus ARC simulation response data; $V_{eq} = 75$ knots.

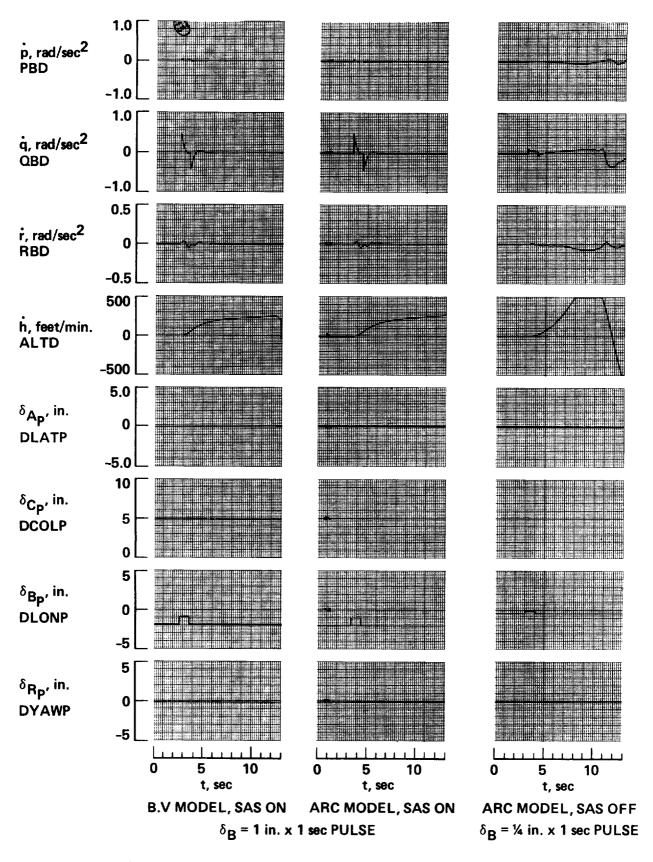


Figure 49.- BV versus ARC simulation response data; V_{eq} = 115 knots.

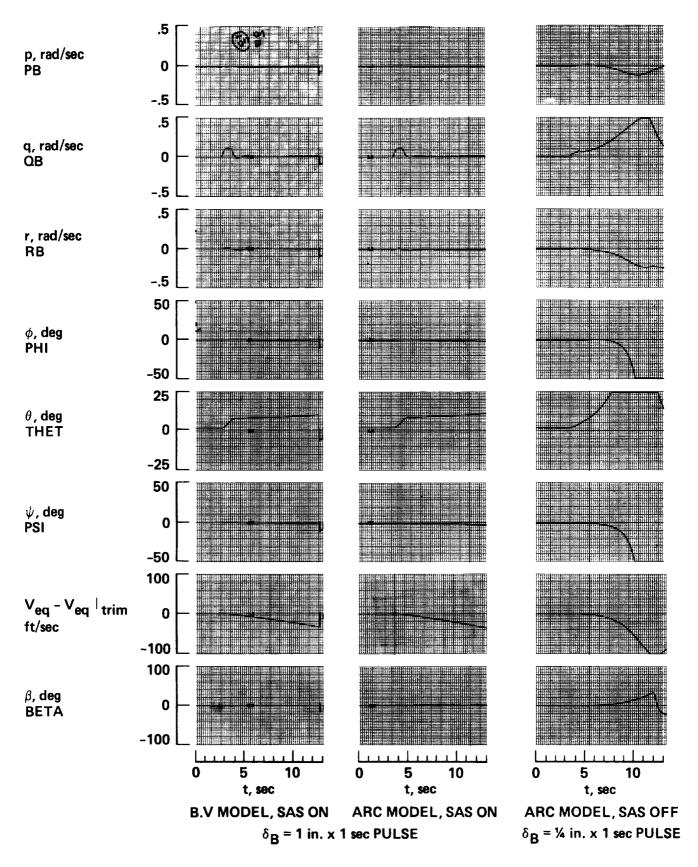


Figure 50.- BV versus ARC simulation response data; V_{eq} = 115 knots.

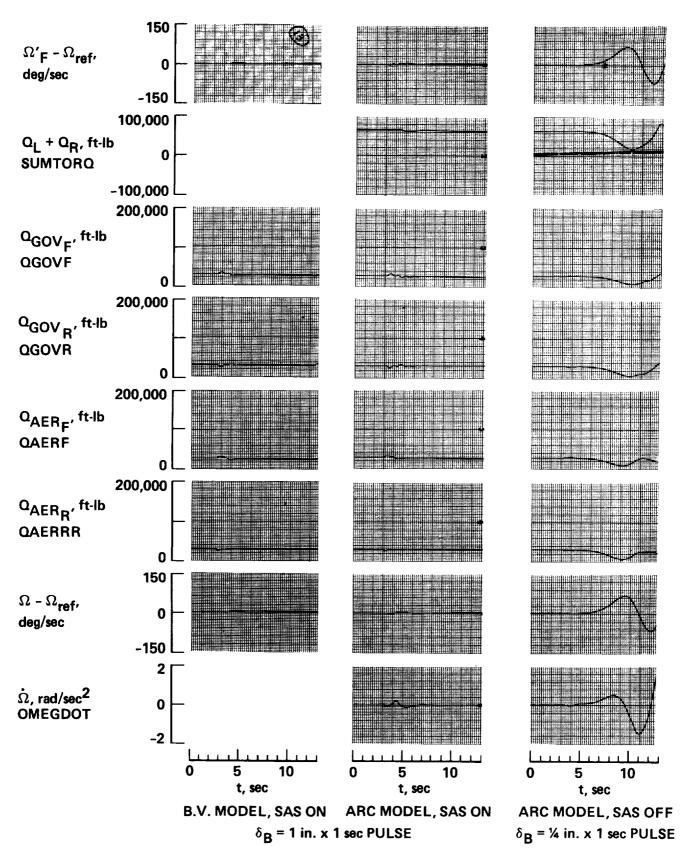


Figure 51.- BV versus ARC simulation response data; $V_{eq} = 115$ knots.

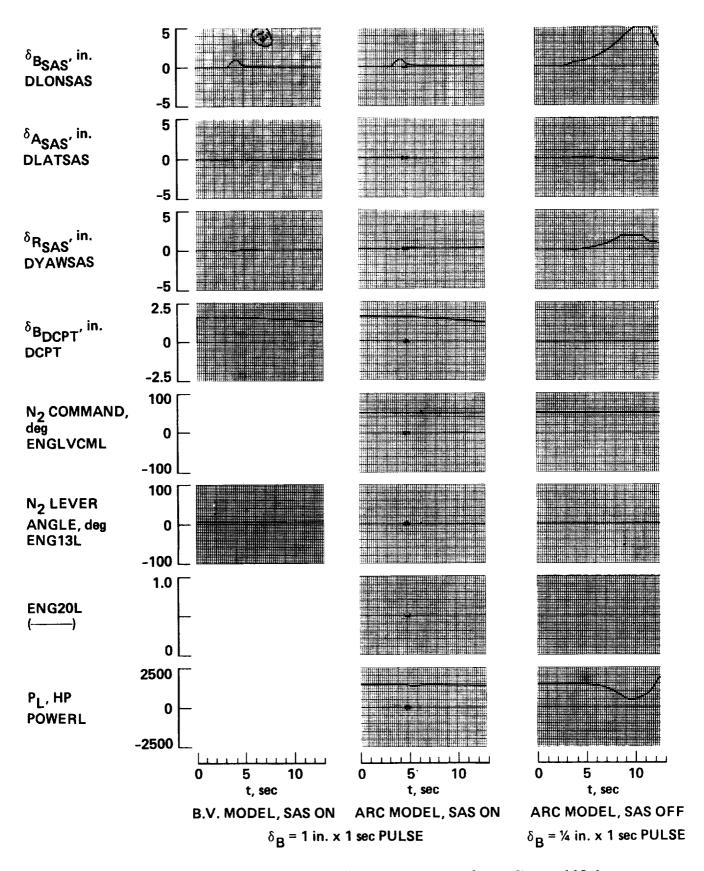


Figure 52.- BV versus ARC simulation response data; $V_{eq} = 115$ knots.

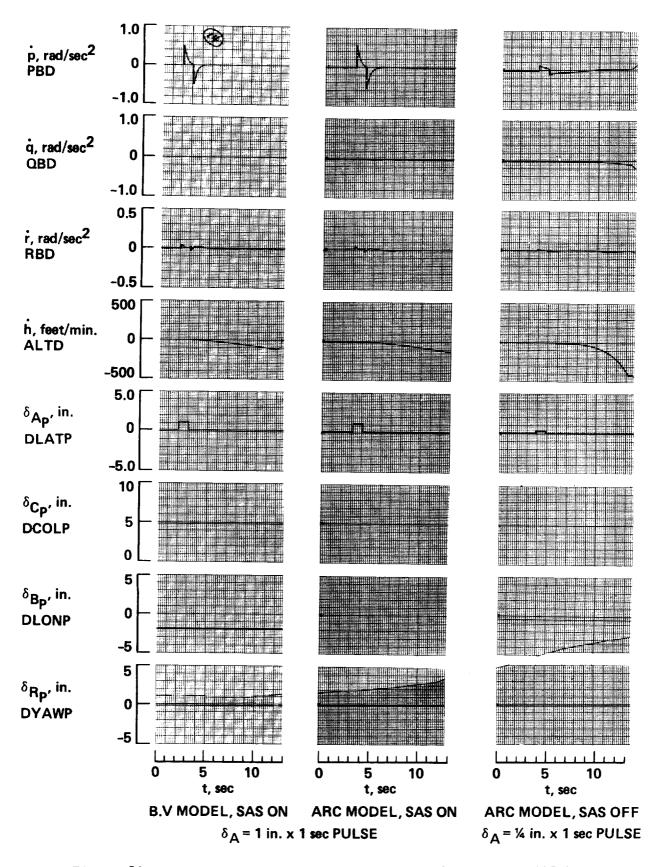


Figure 53.- BV versus ARC simulation response data; V_{eq} = 115 knots.

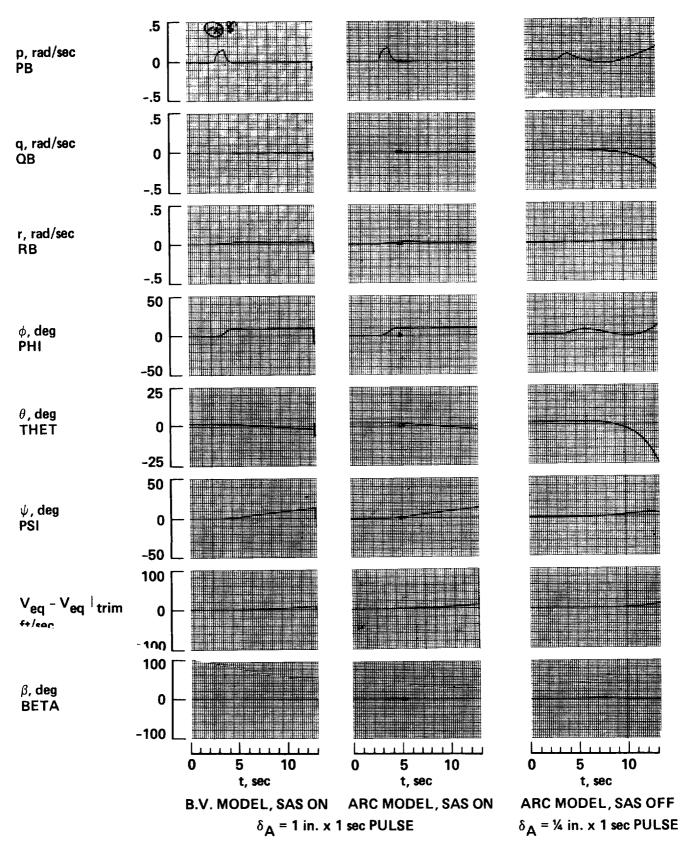


Figure 54.- BV versus ARC simulation response data; $V_{eq} = 115$ knots.

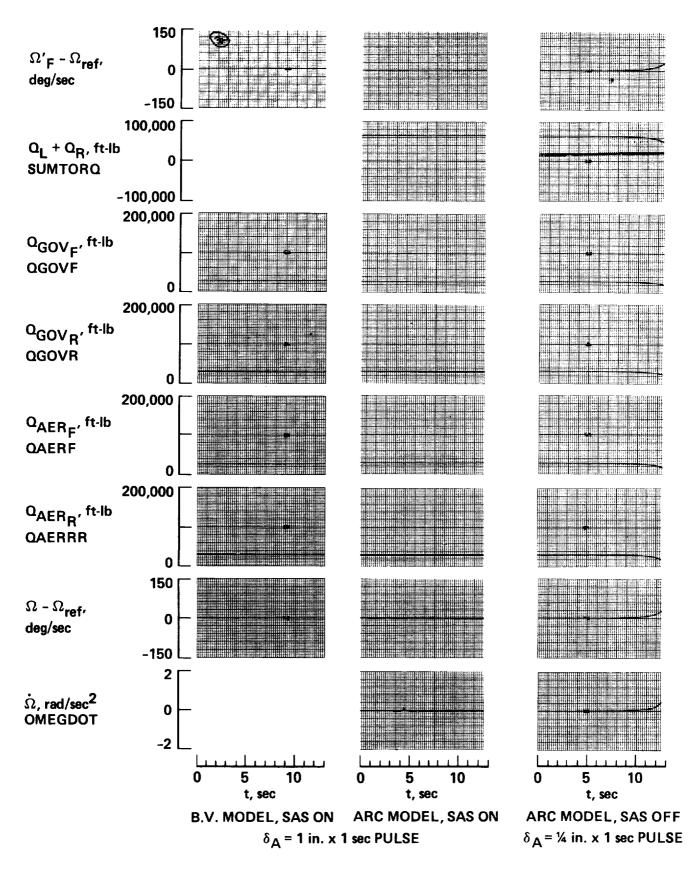


Figure 55.- BV versus ARC simulation response data; $V_{eq} = 115$ knots.

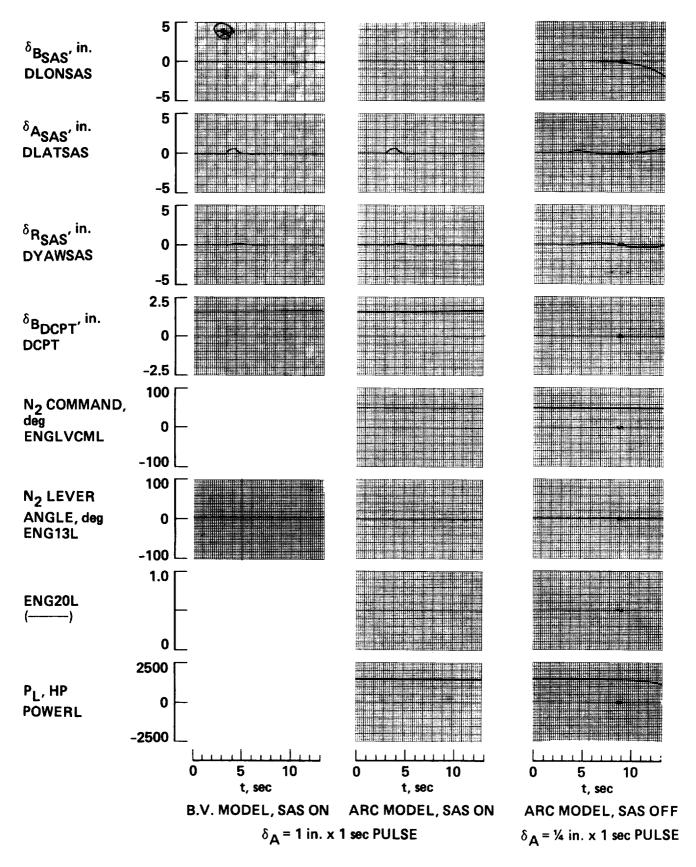


Figure 56.- BV versus ARC simulation response data; V_{eq} = 115 knots.

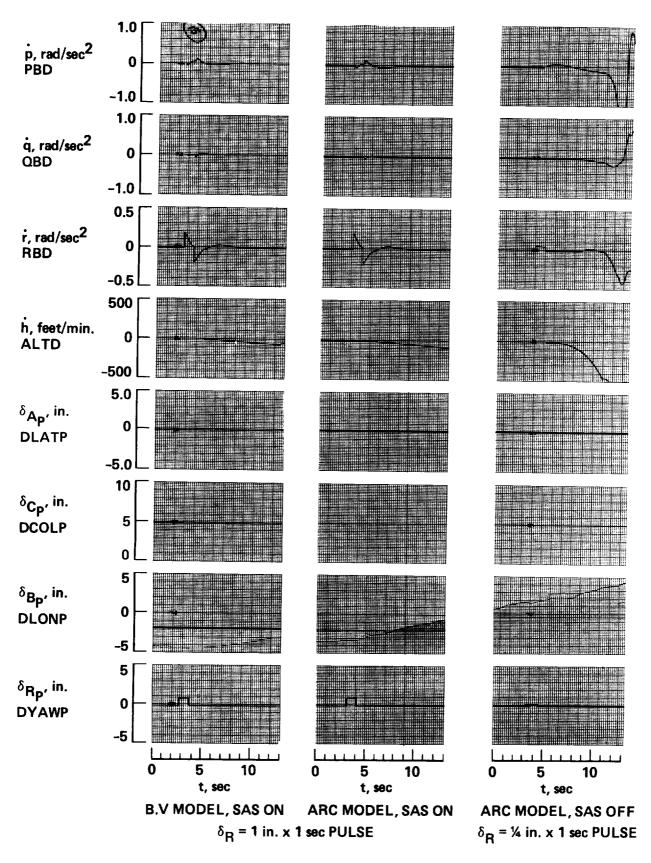


Figure 57.- BV versus ARC simulation response data; V_{eq} = 115 knots.

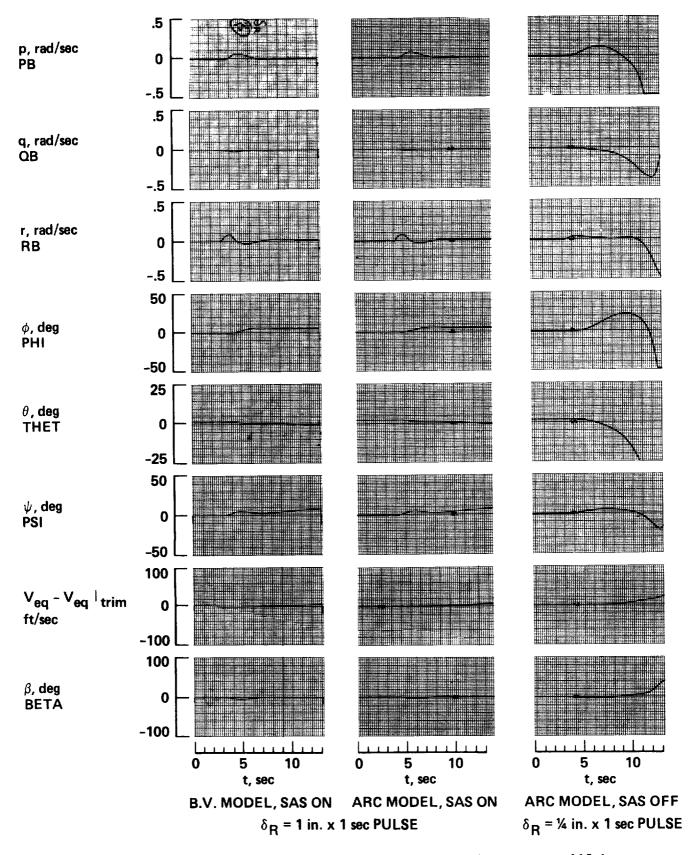


Figure 58.- BV versus ARC simulation response data; V_{eq} = 115 knots.

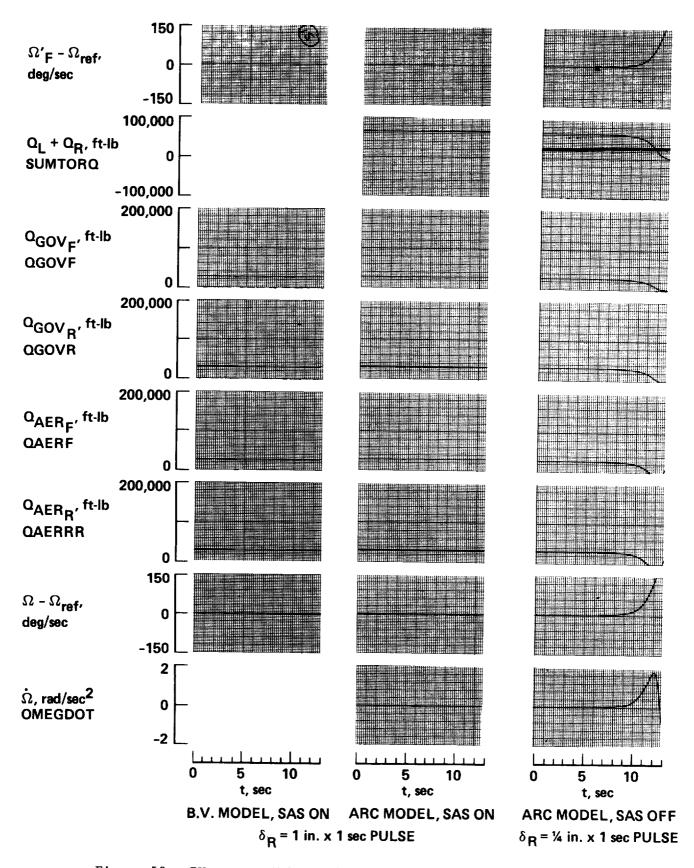


Figure 59.- BV versus ARC simulation response data; V_{eq} = 115 knots.

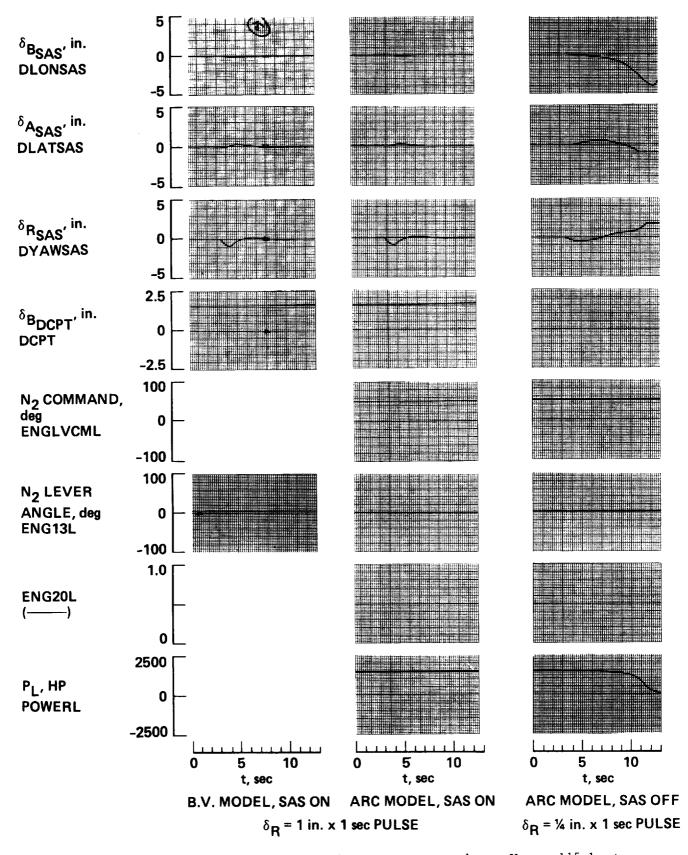


Figure 60.- BV versus ARC simulation response data; v_{eq} = 115 knots.

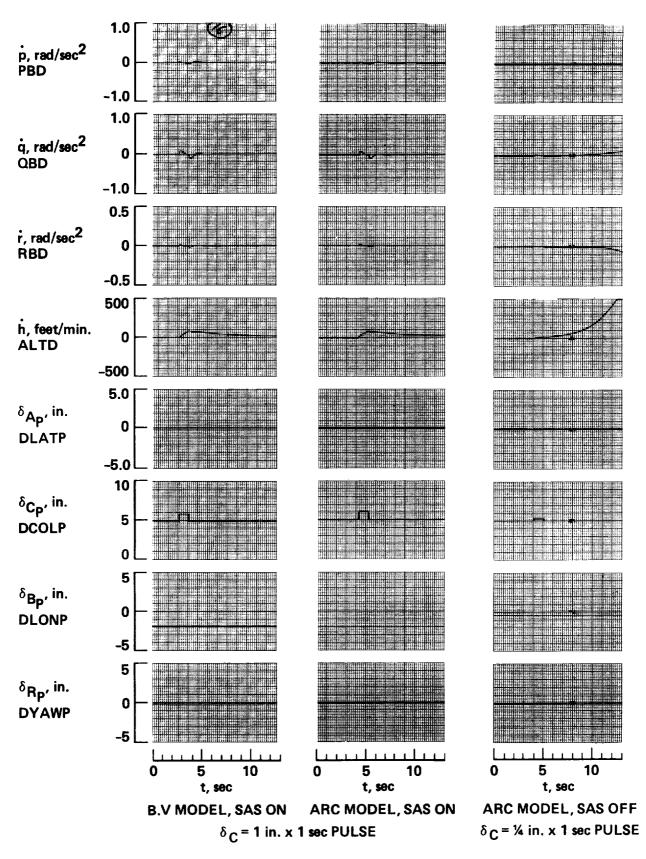


Figure 61.- BV versus ARC simulation response data; V_{eq} = 115 knots.

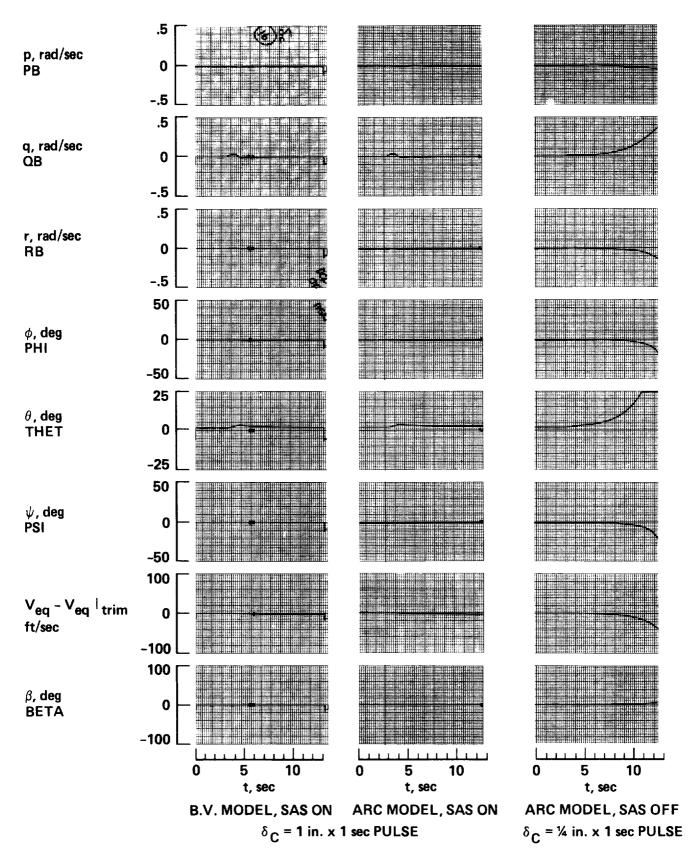


Figure 62.- BV versus ARC simulation response data; V_{eq} = 115 knots.

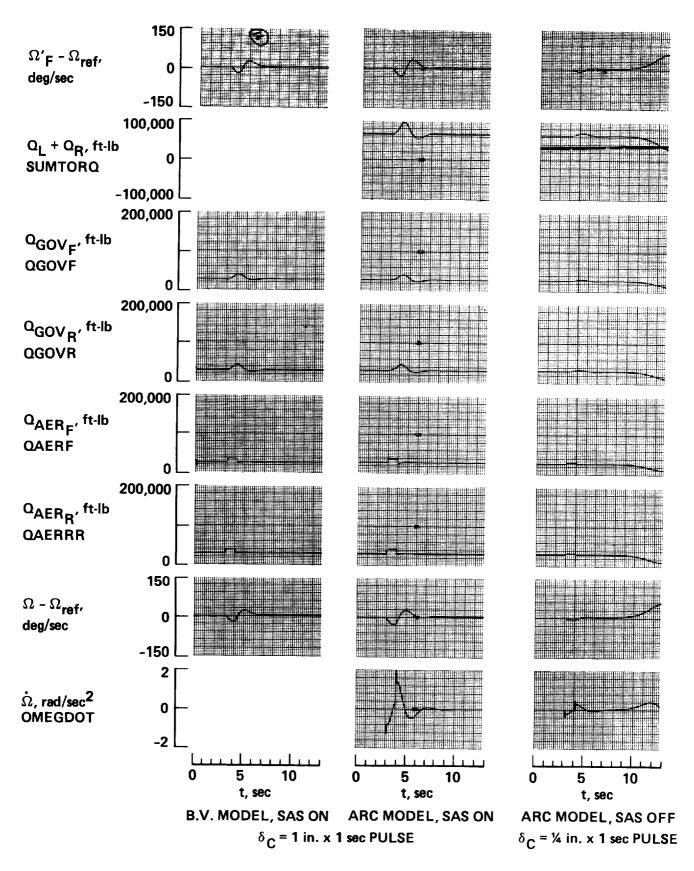


Figure 63.- BV versus ARC simulation response data; V_{eq} = 115 knots.

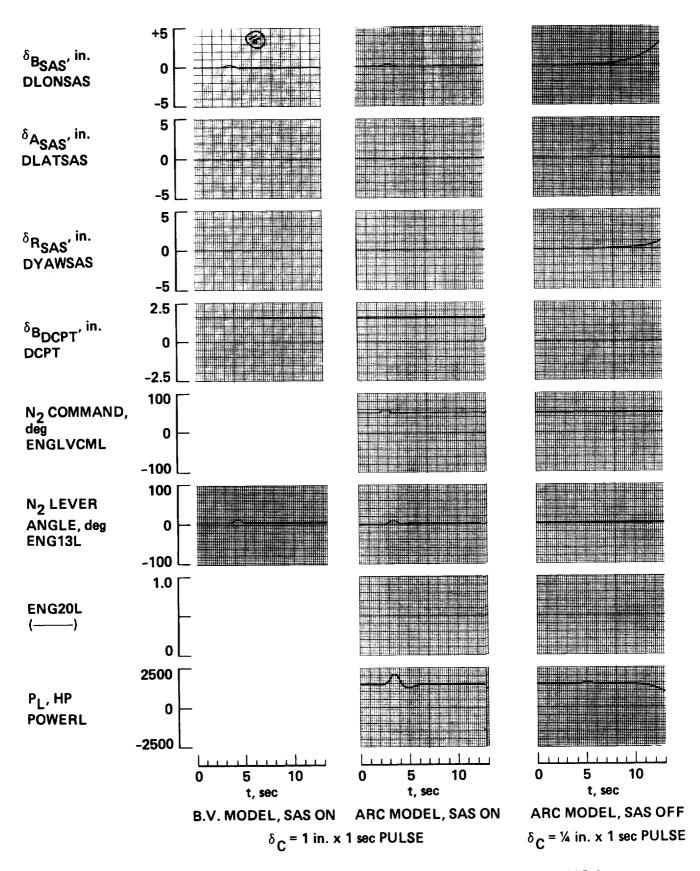


Figure 64.- BV versus ARC simulation response data; V_{eq} = 115 knots.

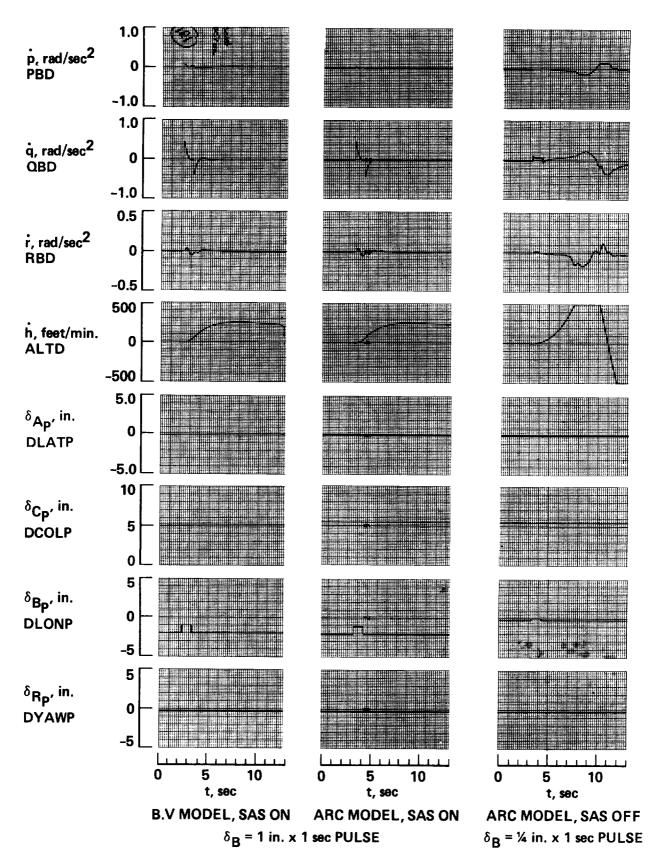


Figure 65.- BV versus ARC simulation response data; $V_{eq} = 130$ knots.

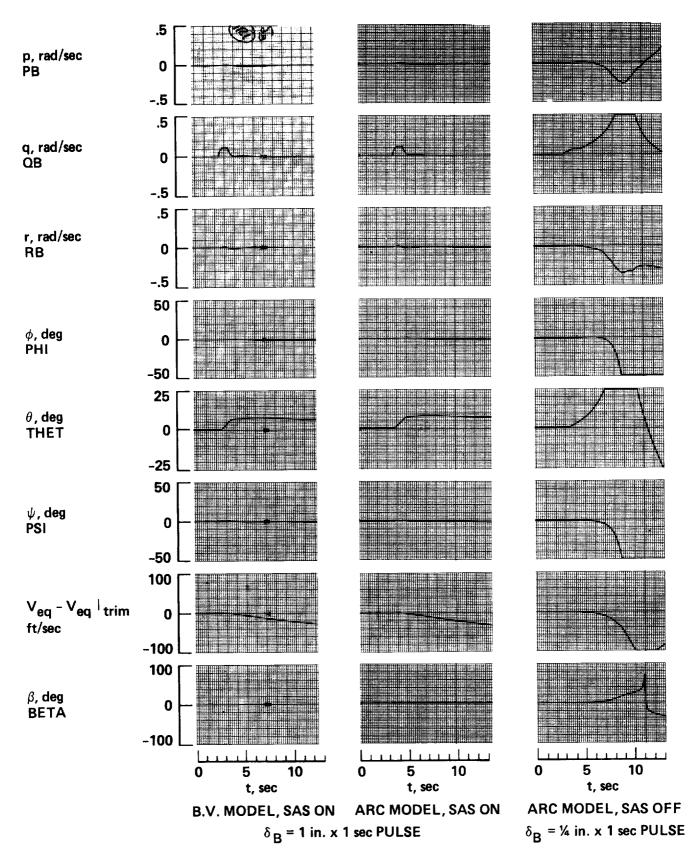


Figure 66.- BV versus ARC simulation response data; V_{eq} = 130 knots.

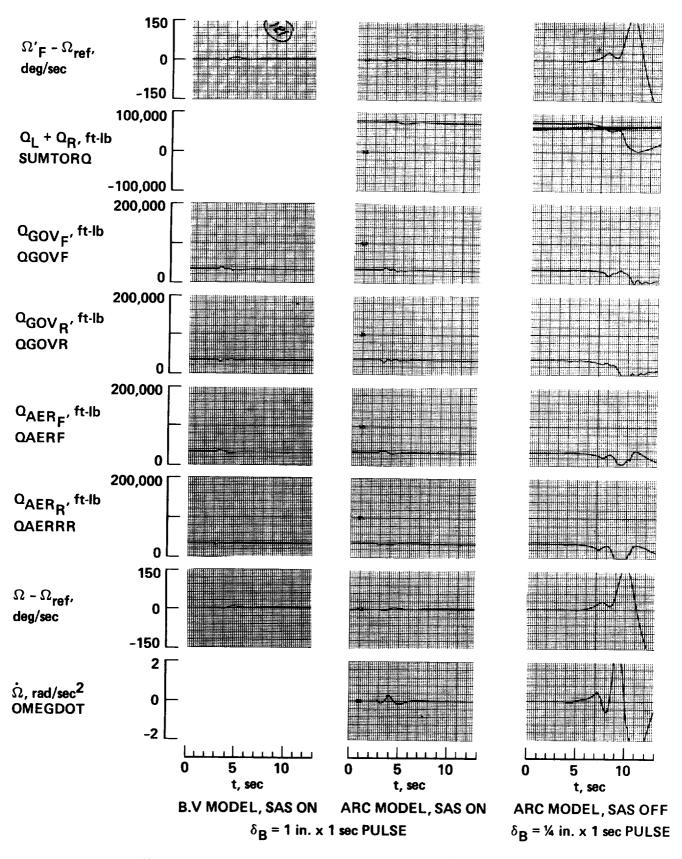


Figure 67.- BV versus ARC simulation response data; V_{eq} = 130 knots.

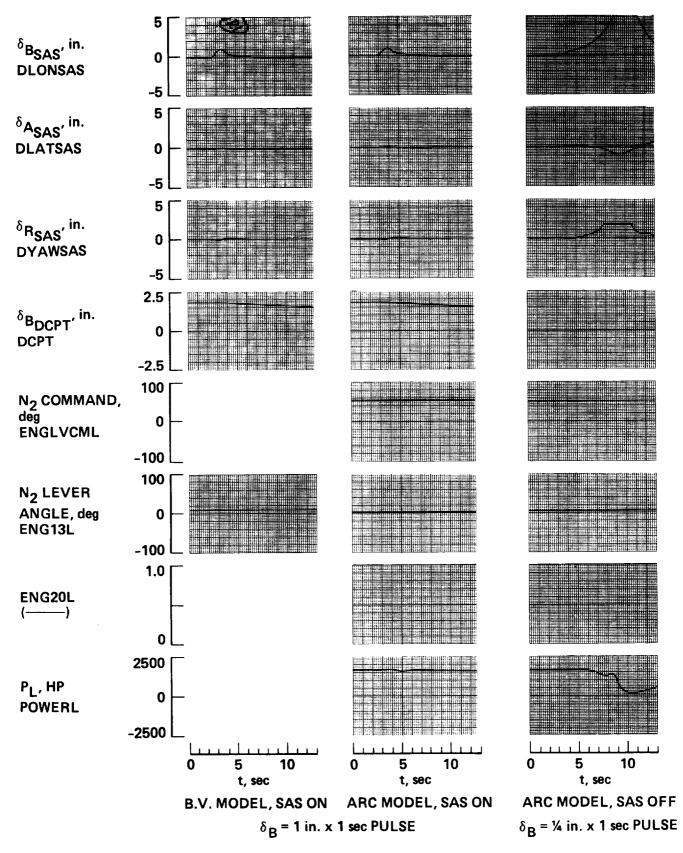


Figure 68.- BV versus ARC simulation response data; V_{eq} = 130 knots.

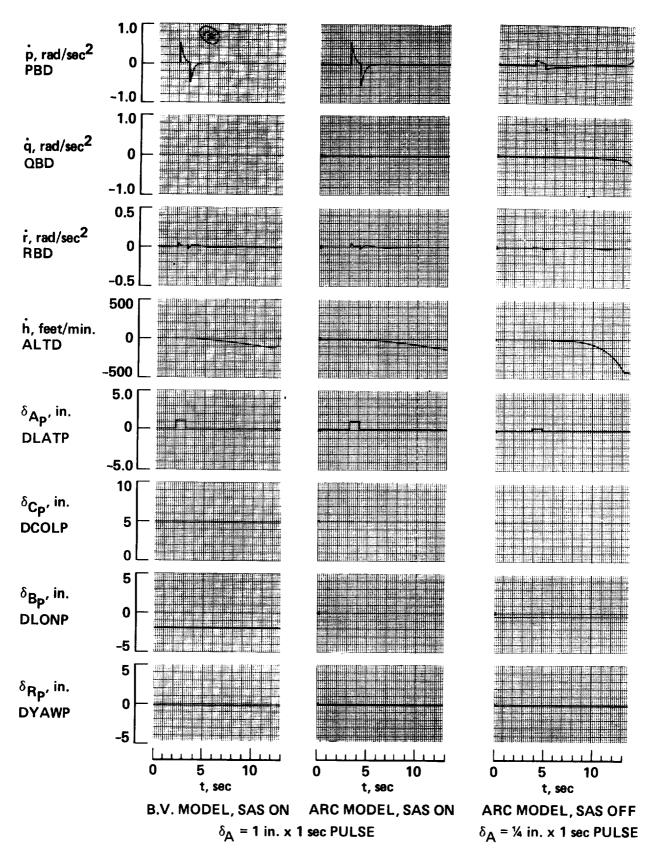


Figure 69.- BV versus ARC simulation response data; V_{eq} = 130 knots.

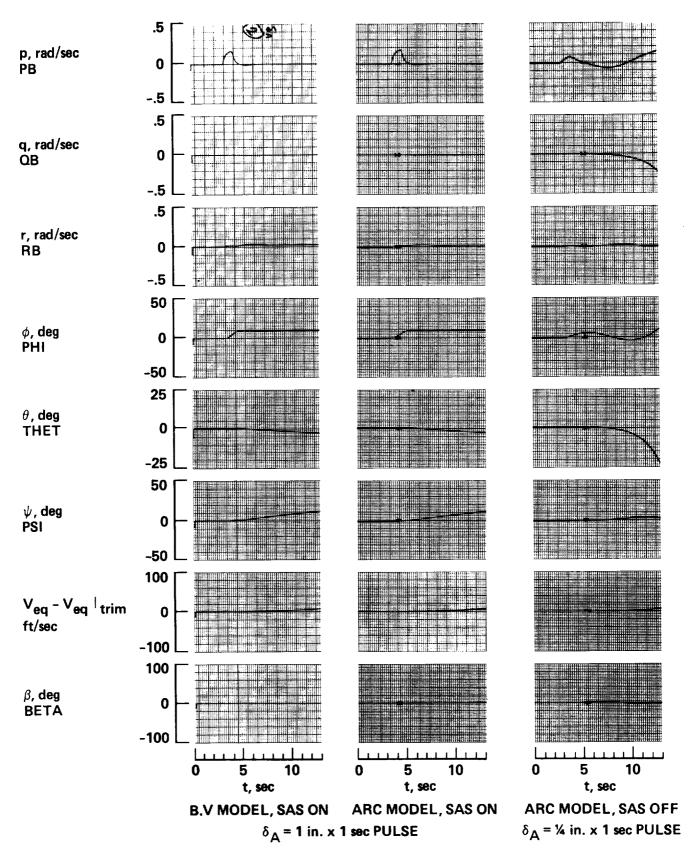


Figure 70.- BV versus ARC simulation response data; V_{eq} = 130 knots.

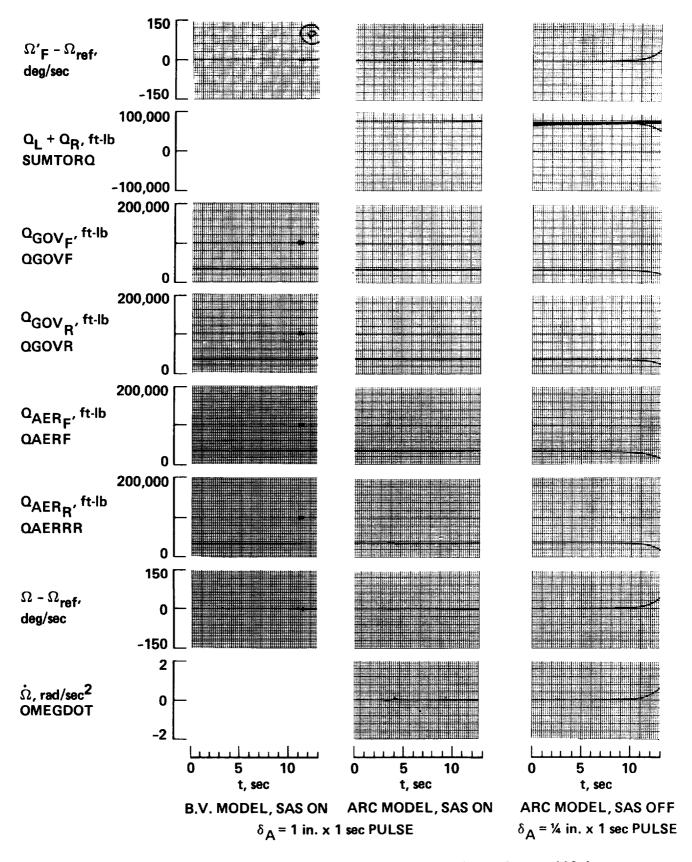


Figure 71.- BV versus ARC simulation response data; $V_{eq} = 130$ knots.

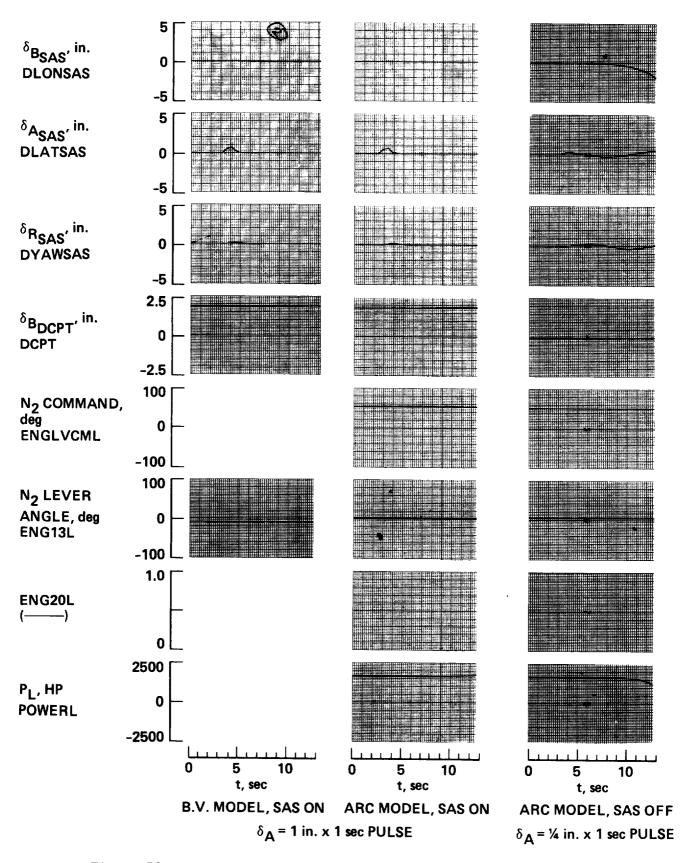


Figure 72.- BV versus ARC simulation response data; V_{eq} = 130 knots.

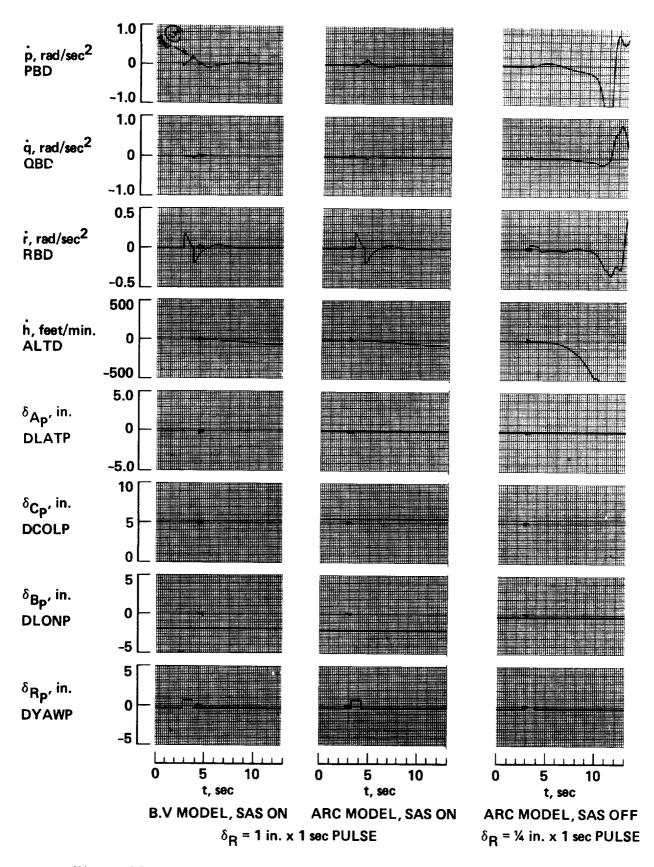


Figure 73.- BV versus ARC simulation response data; $V_{eq} = 130$ knots.

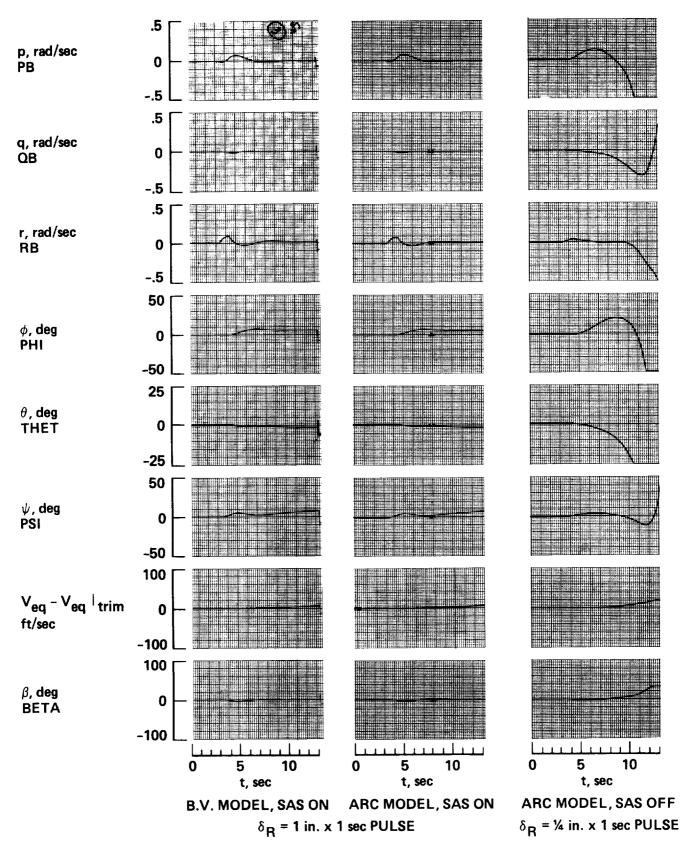


Figure 74.- BV versus ARC simulation response data; $V_{eq} = 130$ knots.

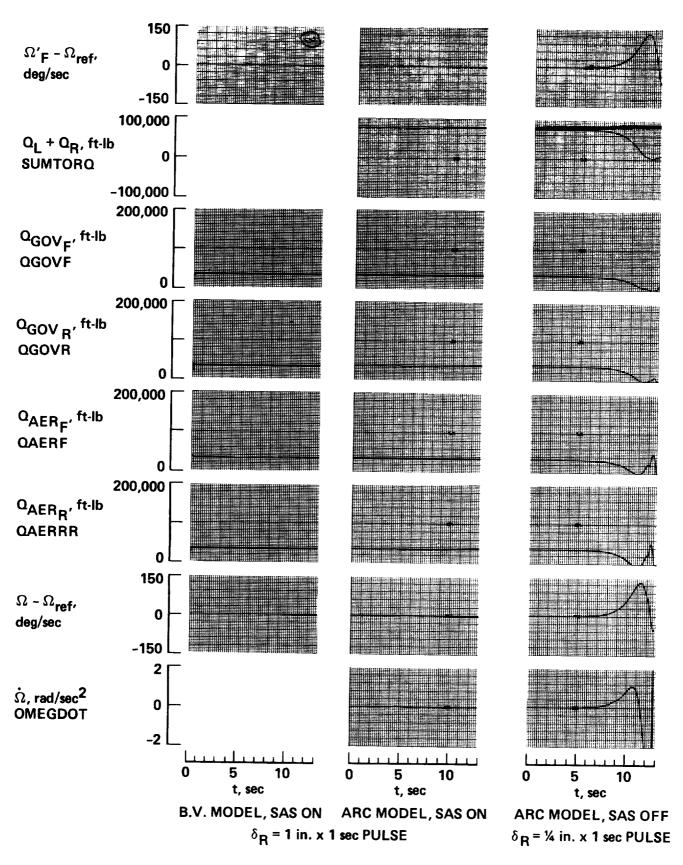


Figure 75.- BV versus ARC simulation response data; $V_{eq} = 130 \text{ knots.}$

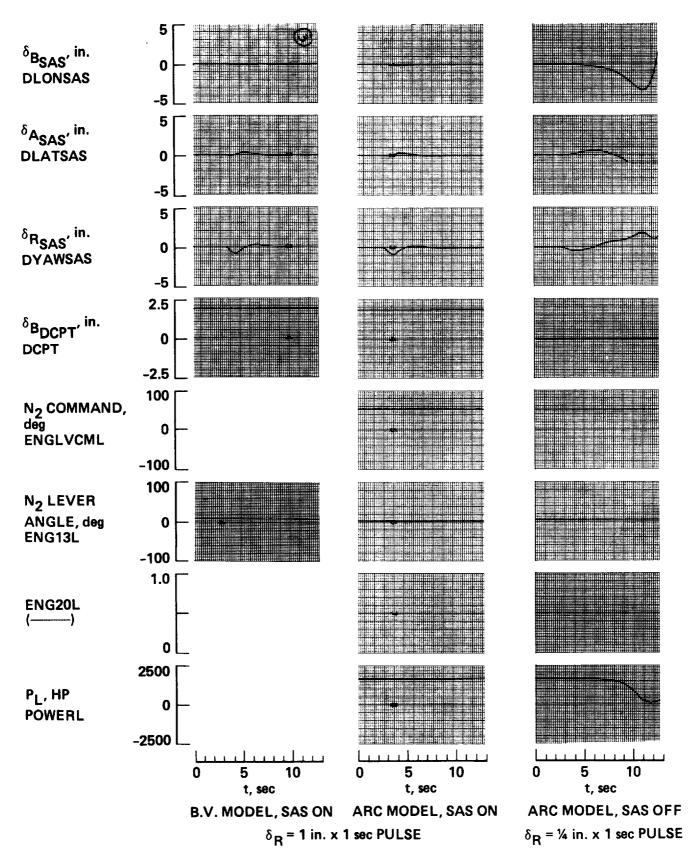


Figure 76.- BV versus ARC simulation response data; $V_{eq} = 130$ knots.

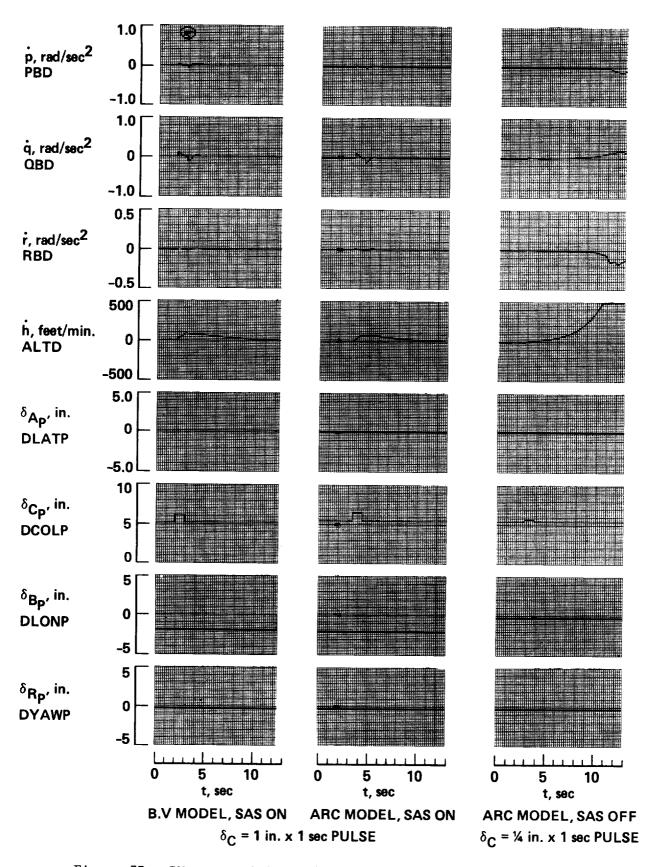


Figure 77.- BV versus ARC simulation response data; V_{eq} = 130 knots.

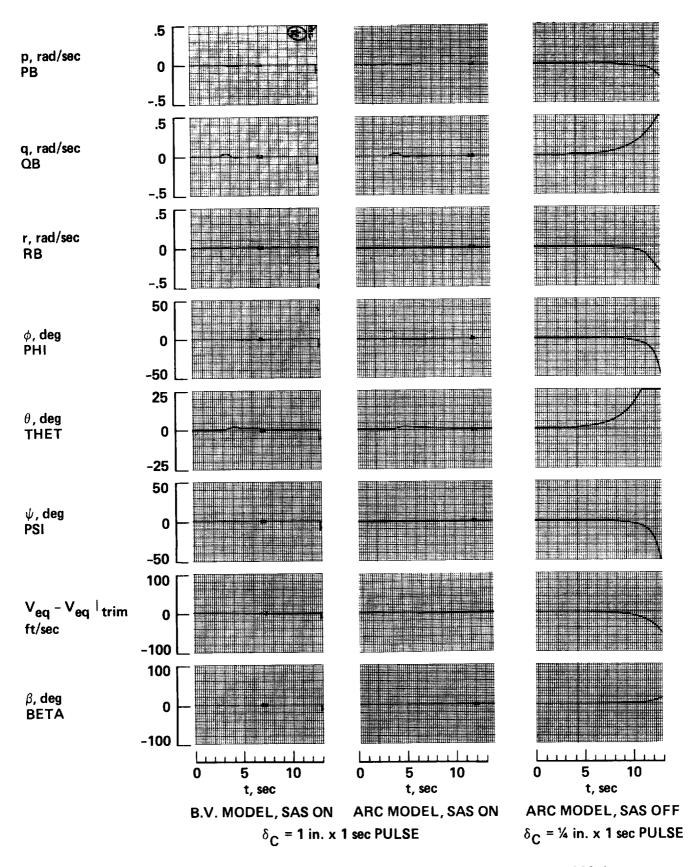


Figure 78.- BV versus ARC simulation response data; V_{eq} = 130 knots.

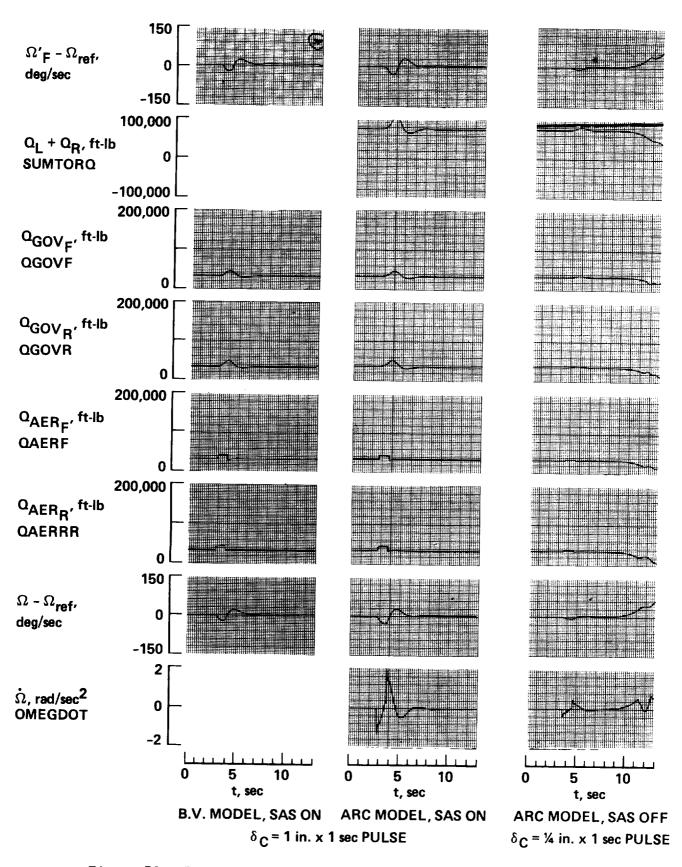


Figure 79.- BV versus ARC simulation response data; $V_{eq} = 130 \text{ knots}$.

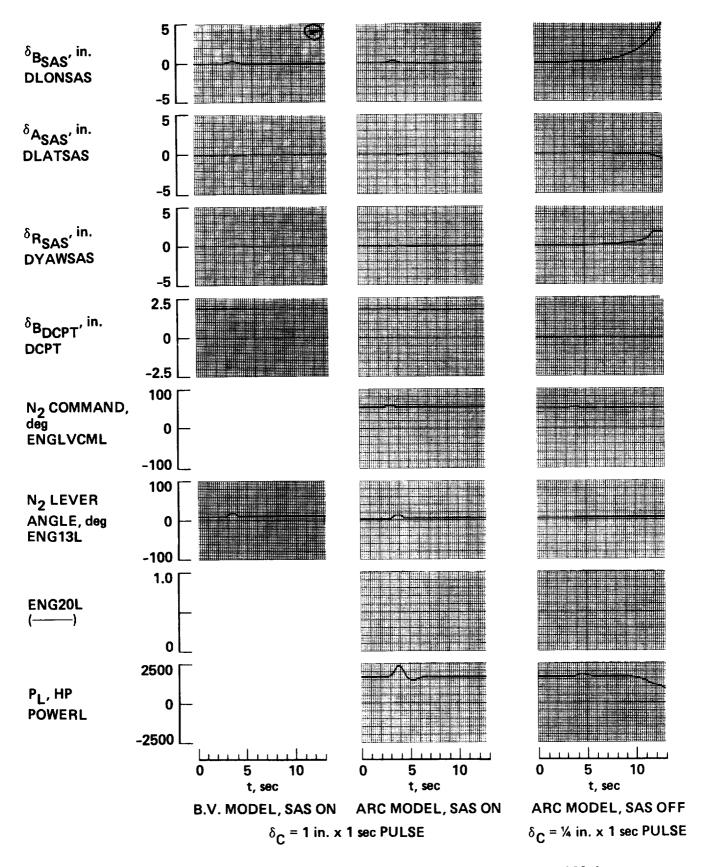


Figure 80.- BV versus ARC simulation response data; $V_{eq} = 130$ knots.

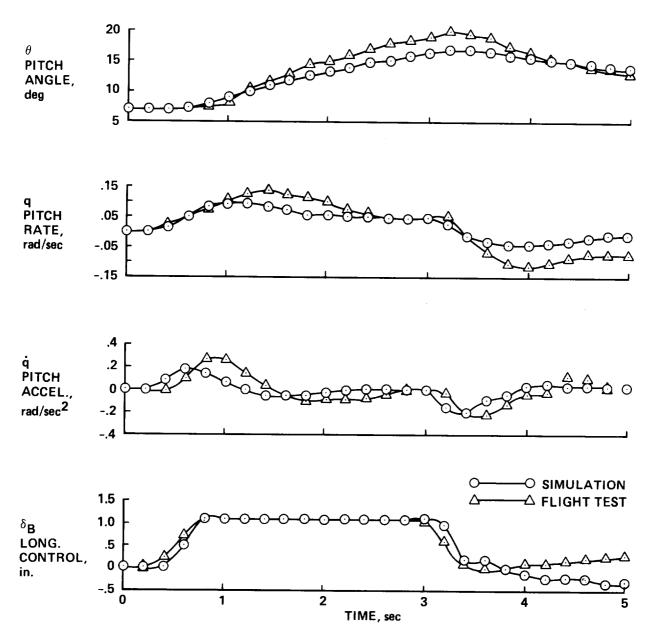


Figure 81.- BV simulation versus flight test dynamic response data (refs. 2,4), hover.

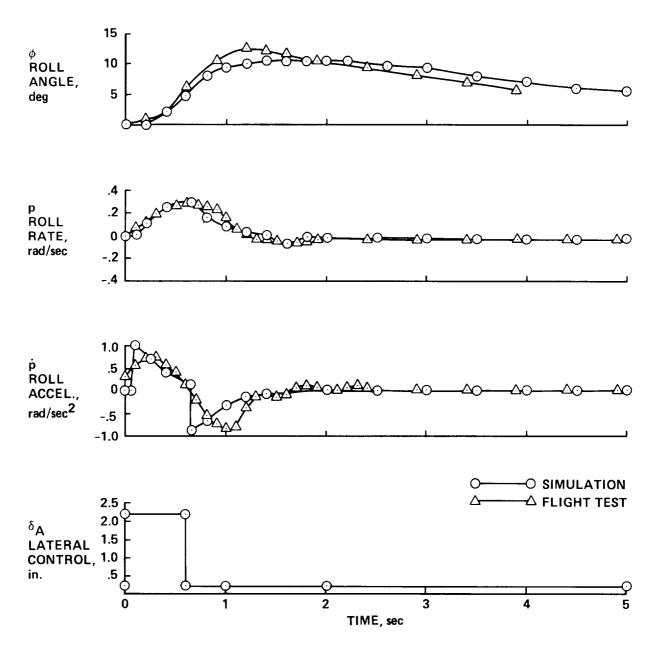


Figure 82.- BV simulation versus flight test dynamic response data (refs. 2,4), $V_{\rm eq}$ = 35 knots.

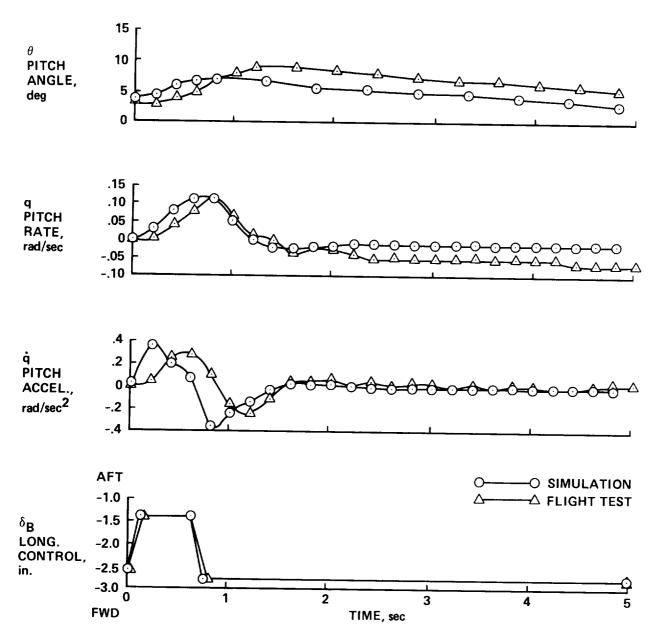


Figure 83.- BV simulation versus flight test dynamic response data (refs. 2,4), $V_{\rm eq}$ = 70 knots.

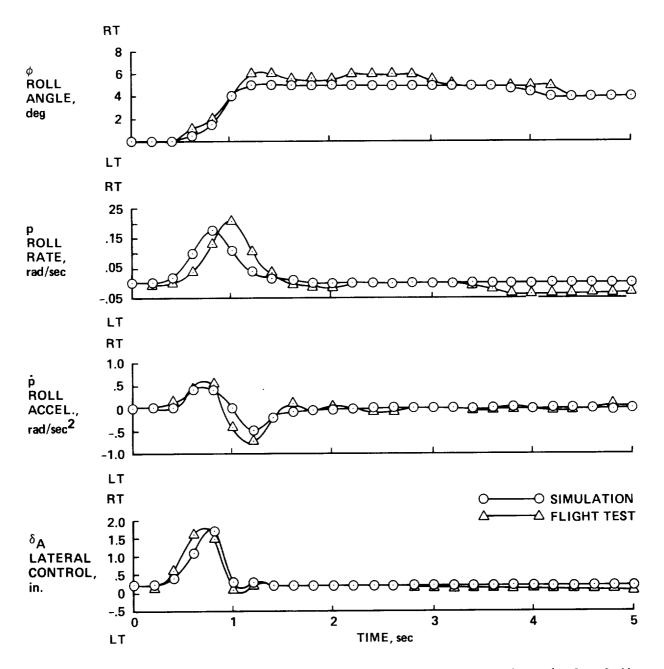


Figure 84.- BV simulation versus flight test dynamic response data (refs. 2,4), $V_{\rm eq}$ = 110 knots.

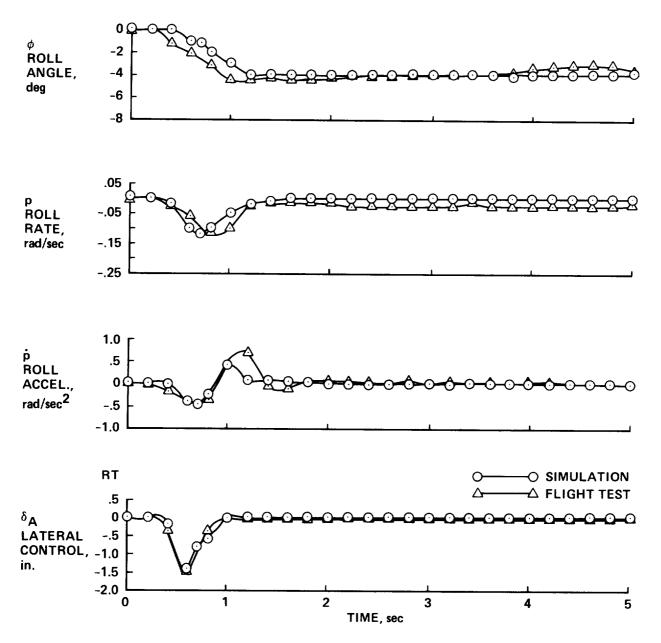


Figure 85.- BV simulation versus flight test dynamic response data (refs. 2,4), $V_{\rm eq}$ = 115 knots.

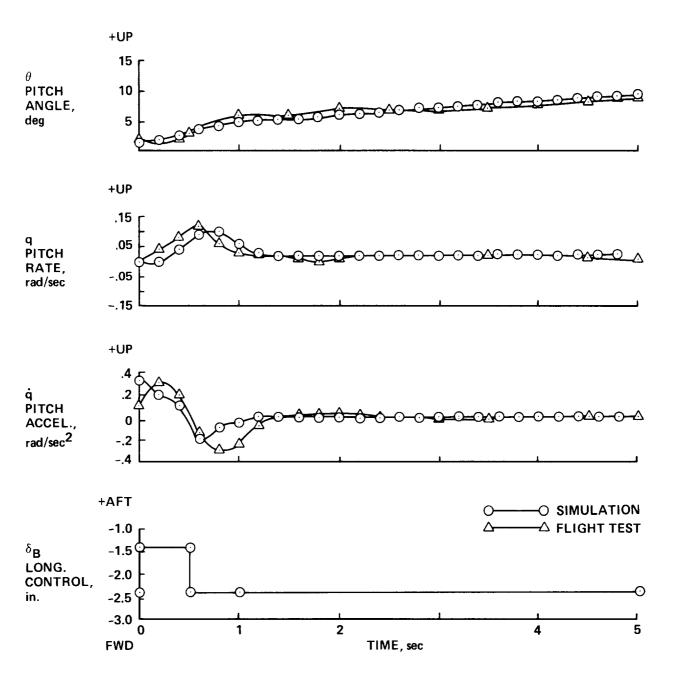


Figure 86.- BV simulation versus flight test dynamic response data (refs. 2,4), $V_{eq} = 127 \text{ knots.}$

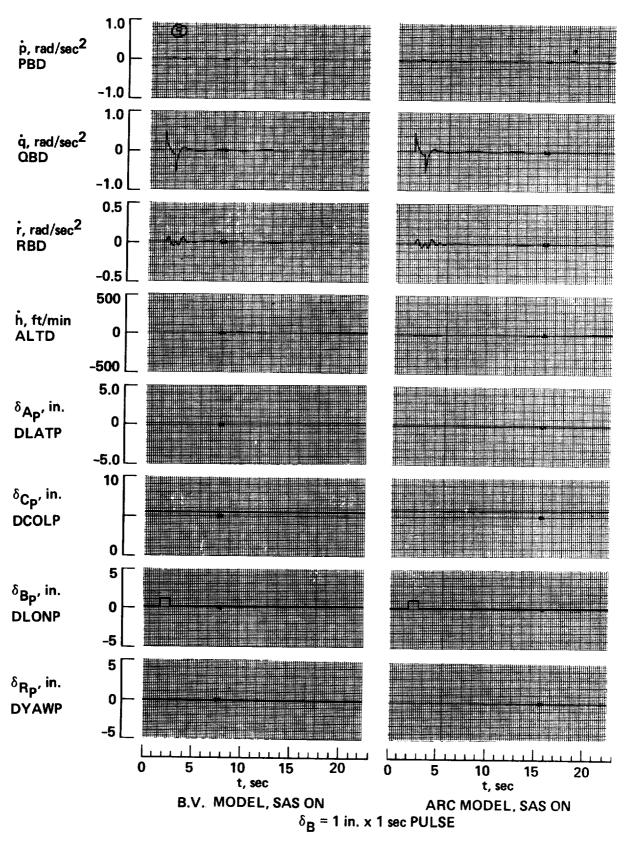


Figure 87.- BV versus ARC simulation response data, slung load attached; hover.

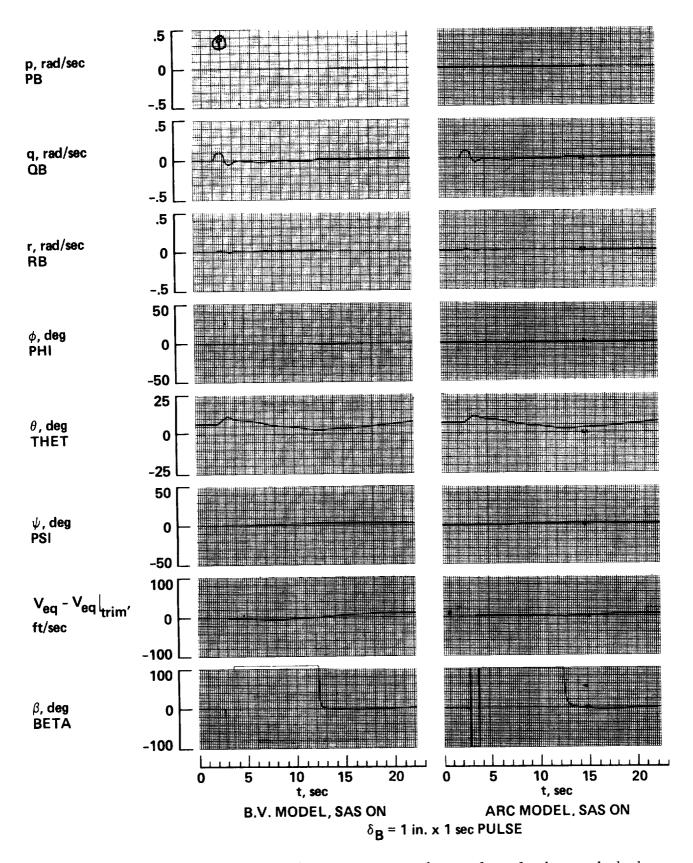


Figure 88.- BV versus ARC simulation response data, slung load attached; hover.

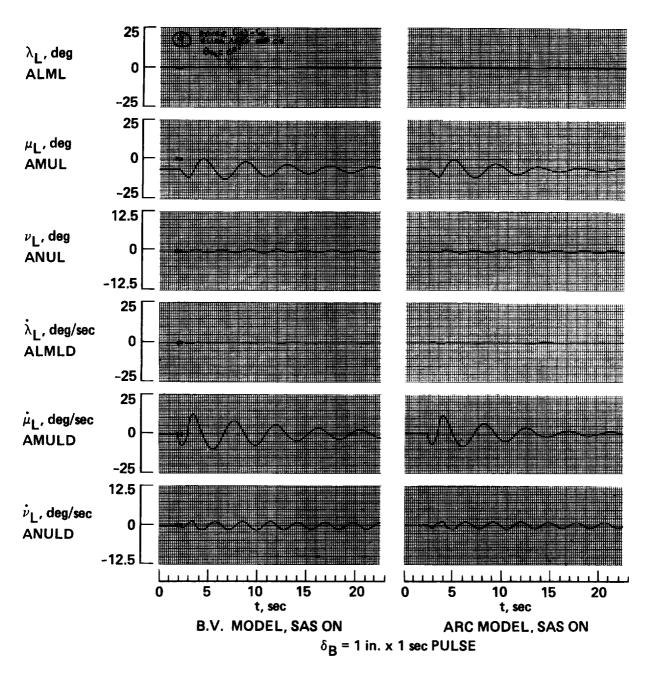


Figure 89.- BV versus ARC simulation response data, slung load attached; hover.

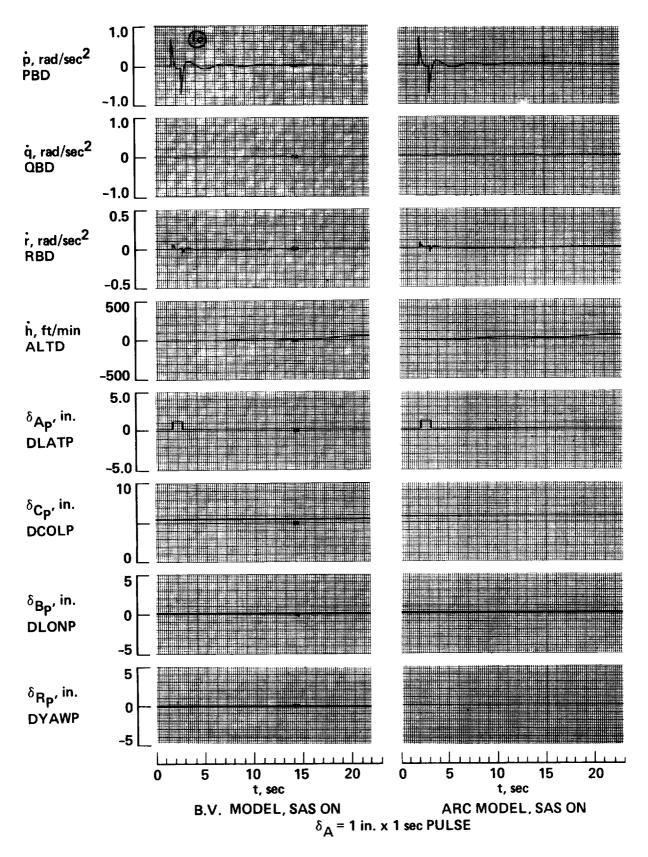


Figure 90.- BV versus ARC simulation response data, slung load attached; hover.

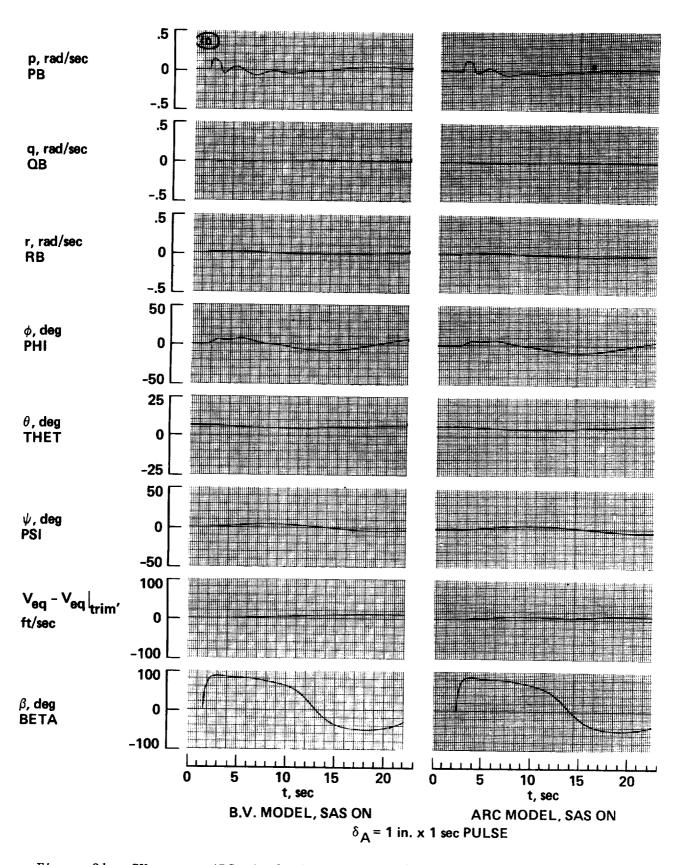


Figure 91.- BV versus ARC simulation response data, slung load attached; hover.

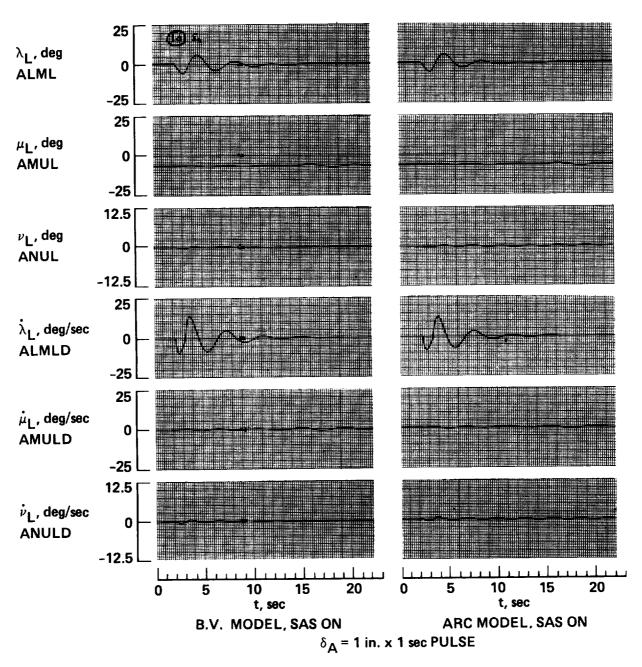


Figure 92.- BV versus ARC simulation response data, slung load attached; hover.

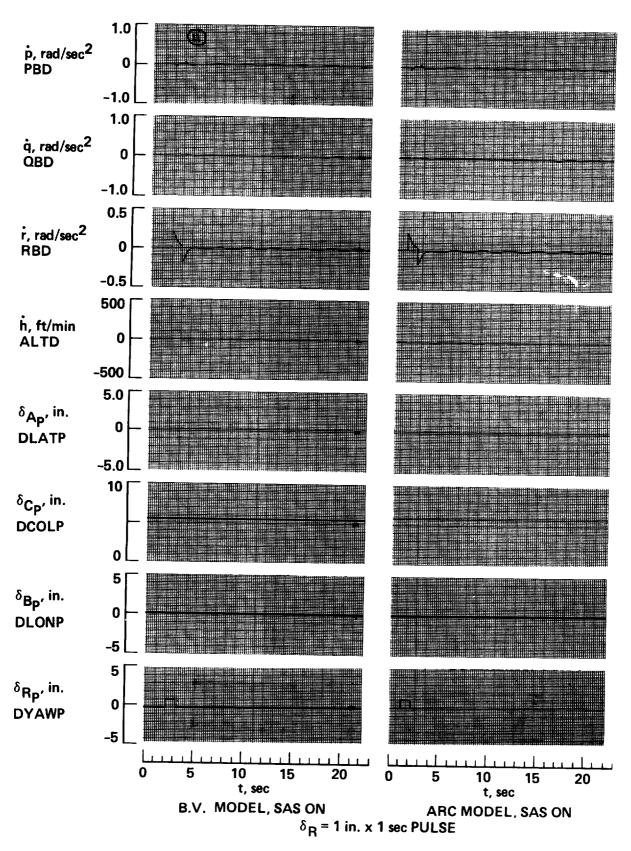


Figure 93.- BV versus ARC simulation response data, slung load attached; hover.

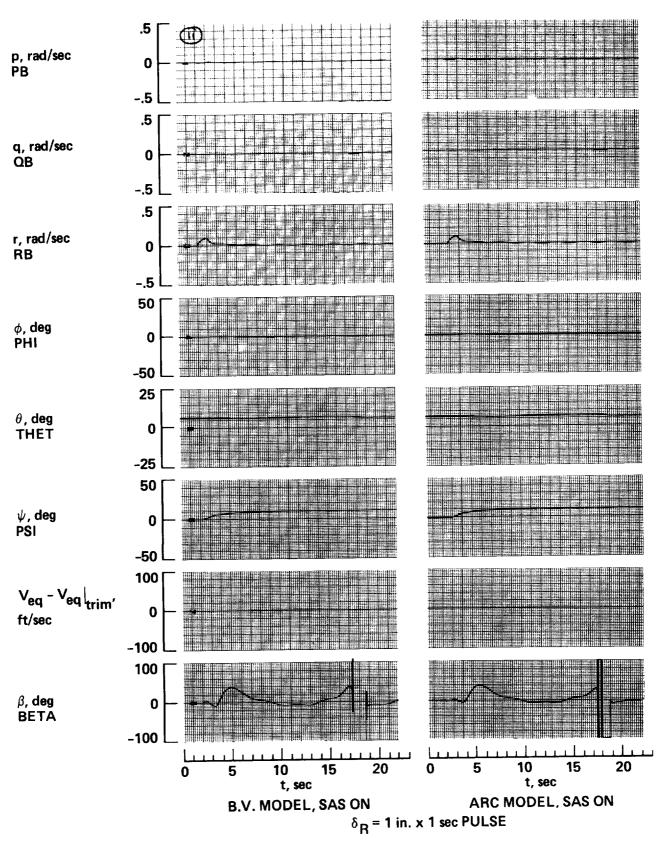


Figure 94.- BV versus ARC simulation response data, slung load attached; hover.

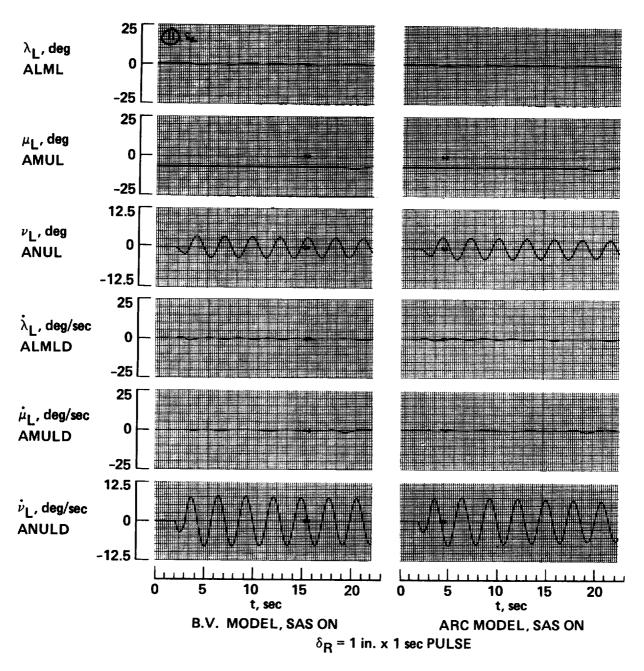


Figure 95.- BV versus ARC simulation response data, slung load attached; hover.

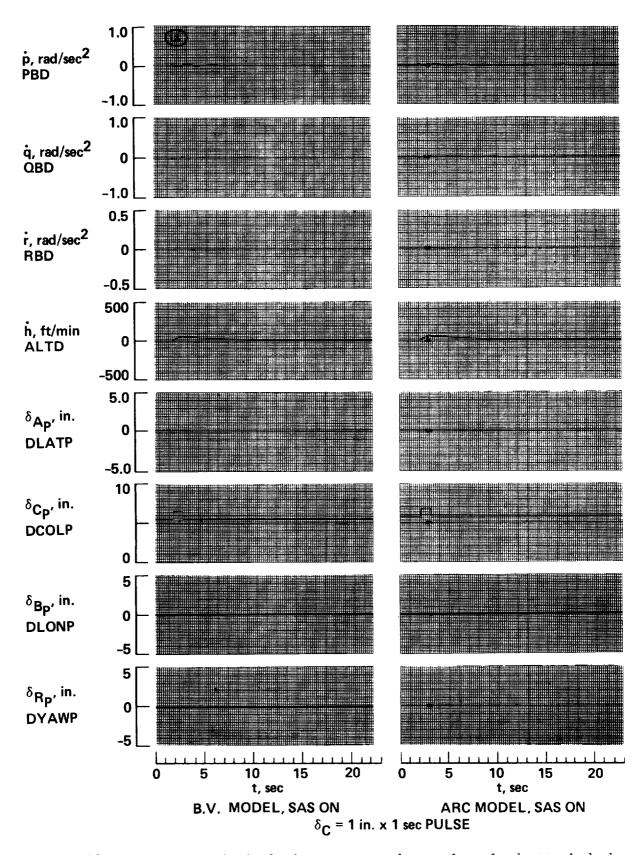


Figure 96.- BV versus ARC simulation response data, slung load attached; hover.

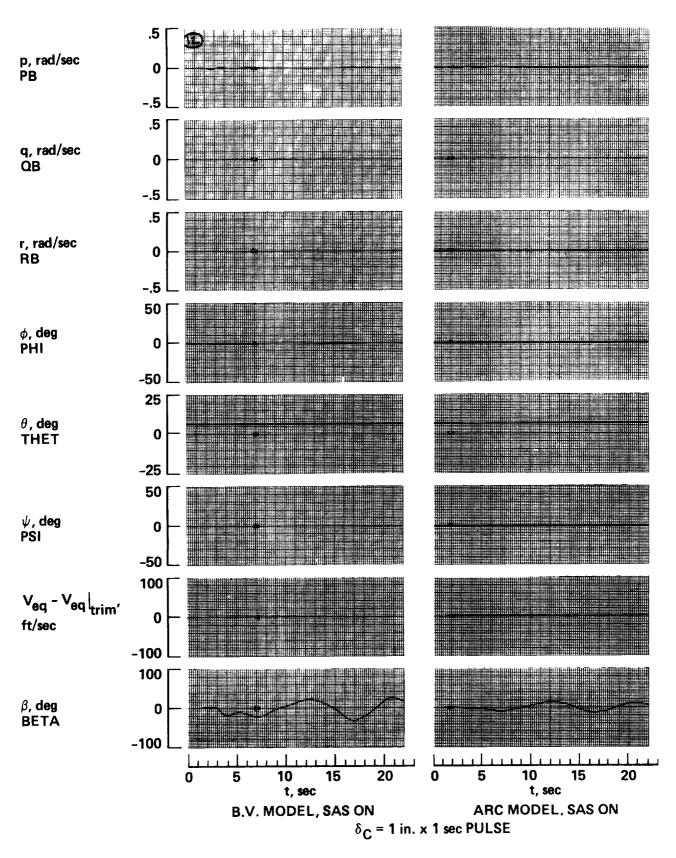


Figure 97.- BV versus ARC simulation response data, slung load attached; hover.

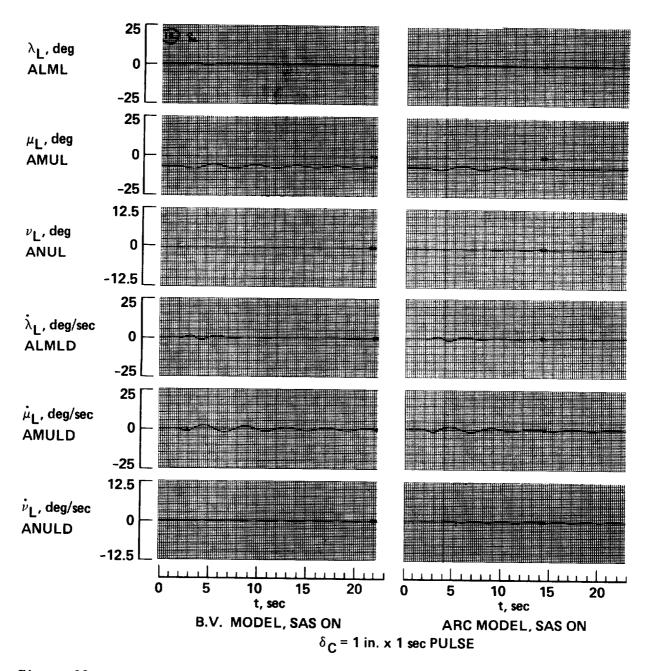


Figure 98.- BV versus ARC simulation response data, slung load attached; hover.

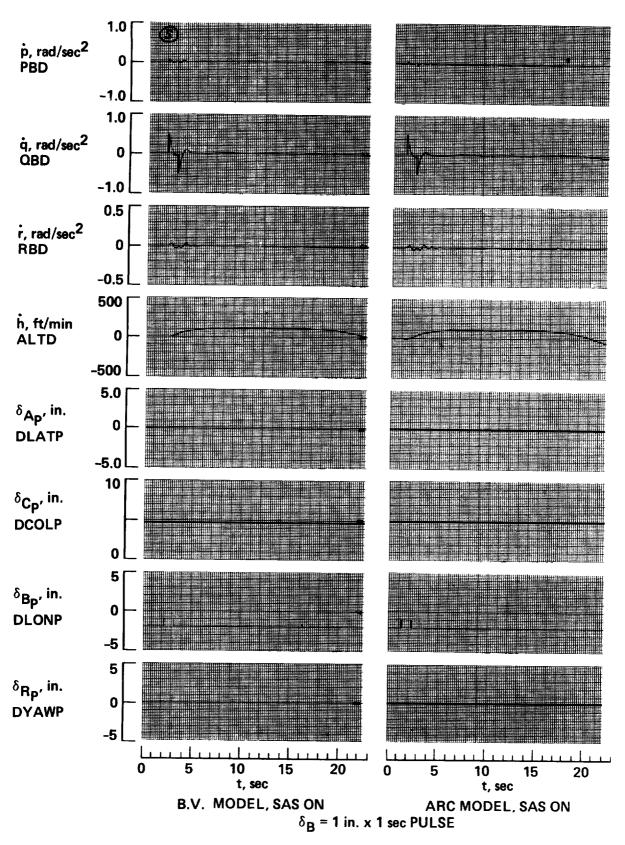


Figure 99.- BV versus ARC simulation response data, slung load attached; $V_{eq} = 75$ knots.

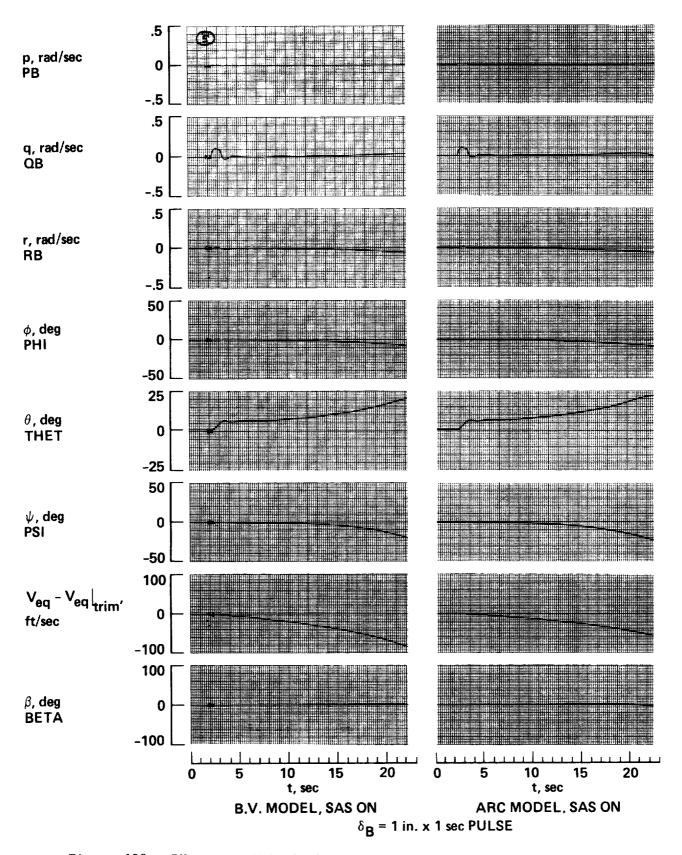


Figure 100.- BV versus ARC simulation response data, slung load attached; $V_{\rm eq}$ = 75 knots.

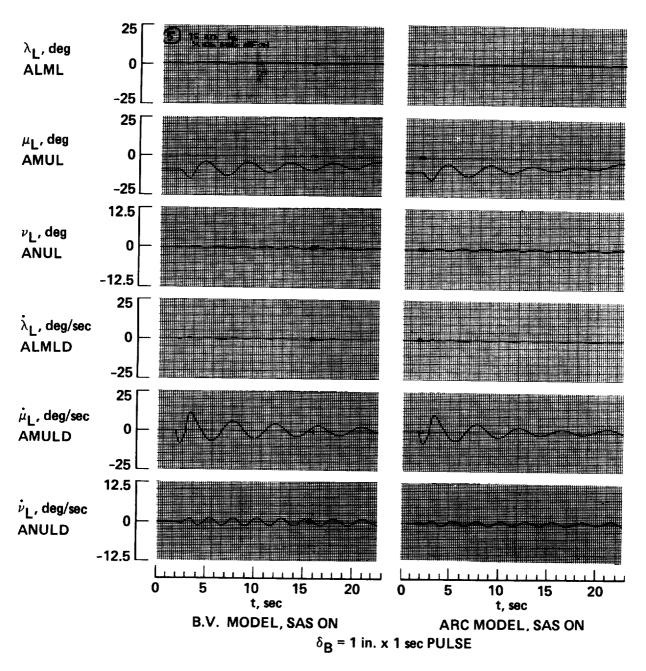


Figure 101.- BV versus ARC simulation response data, slung load attached; $V_{\rm eq}$ = 75 knots.

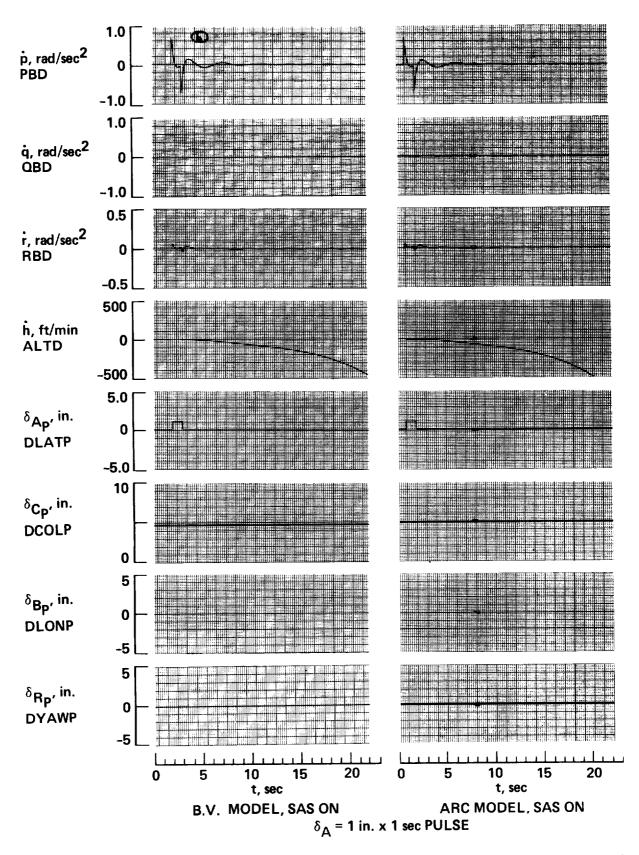


Figure 102.- BV versus ARC simulation response data, slung load attached; $V_{\rm eq}$ = 75 knots.

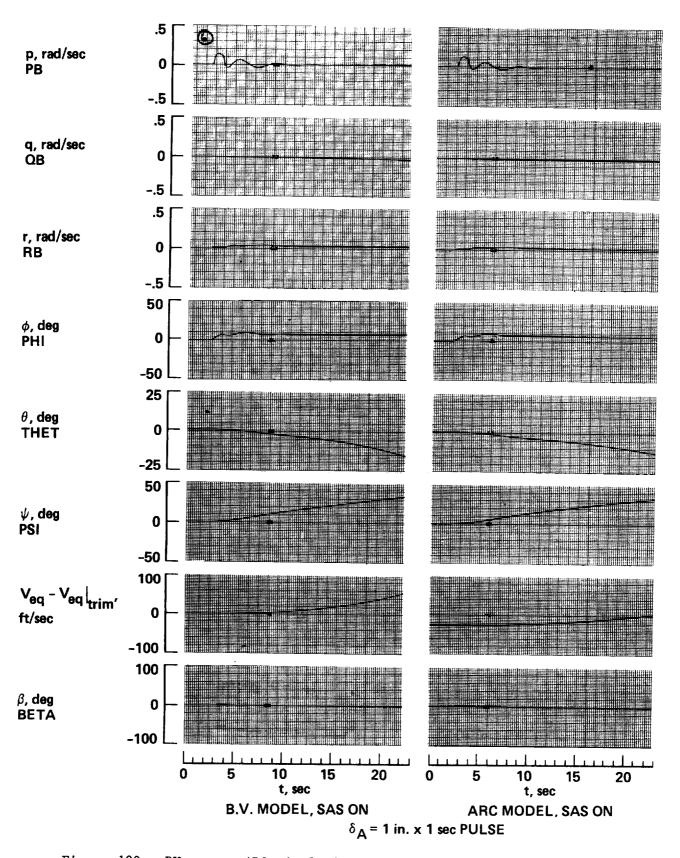


Figure 103.- BV versus ARC simulation response data, slung load attached; $V_{\rm eq}$ = 75 knots.

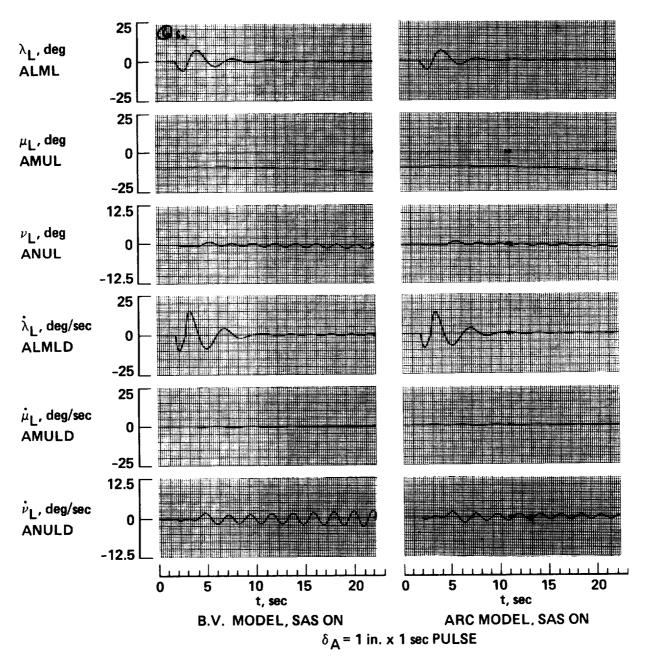


Figure 104.- BV versus ARC simulation response data, slung load attached; $V_{\rm eq} = 75 \, \rm knots$.

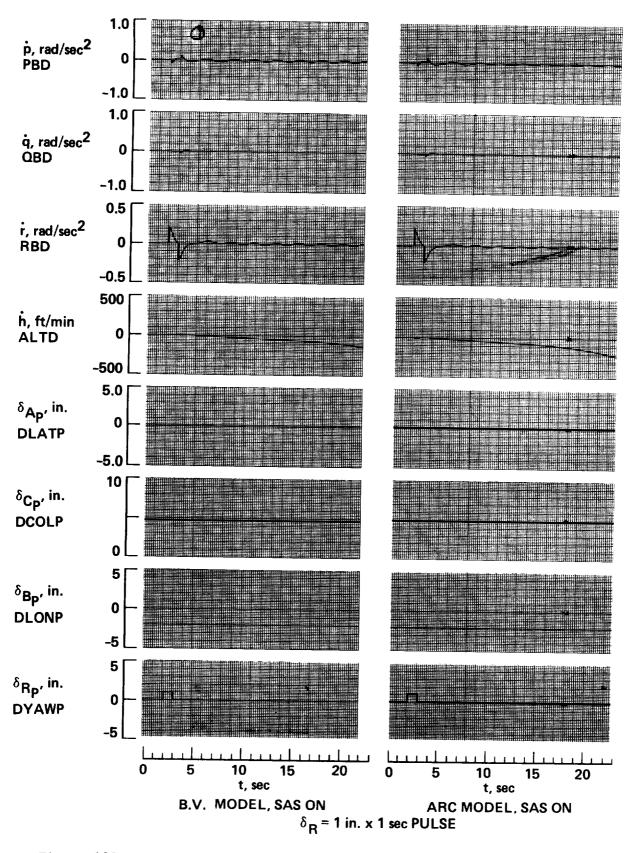


Figure 105.- BV versus ARC simulation response data, slung load attached; $V_{\rm eq}$ = 75 knots.

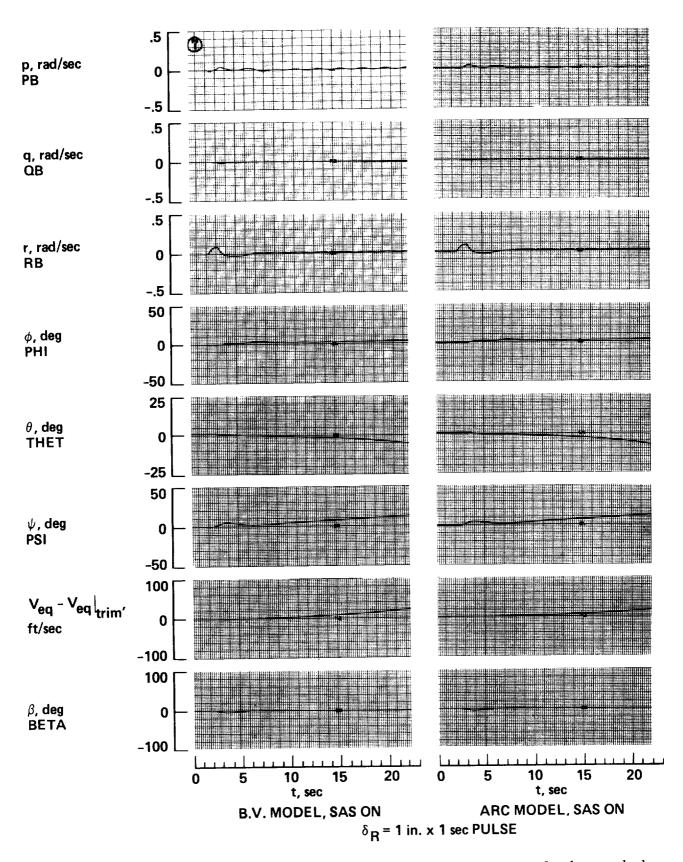


Figure 106.- BV versus ARC simulation response data, slung load attached; $V_{\rm eq} = 75~{\rm knots}$.

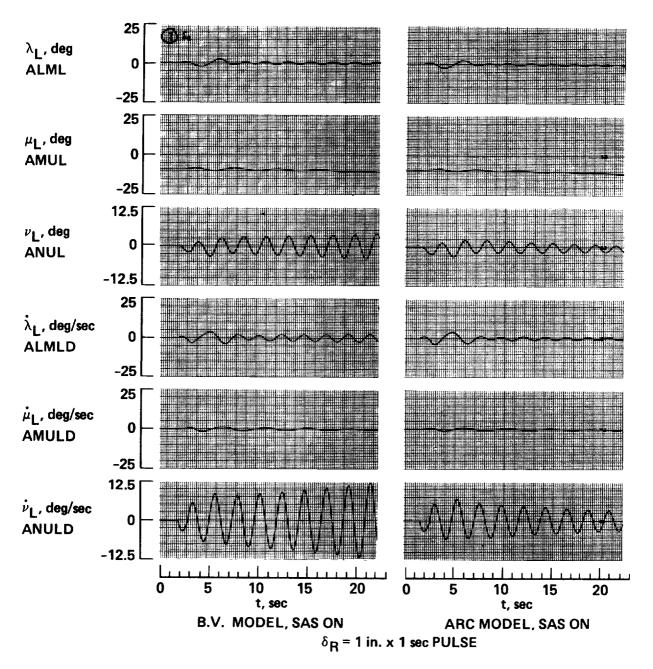


Figure 107.- BV versus ARC simulation response data, slung load attached; $v_{\rm eq}$ = 75 knots.

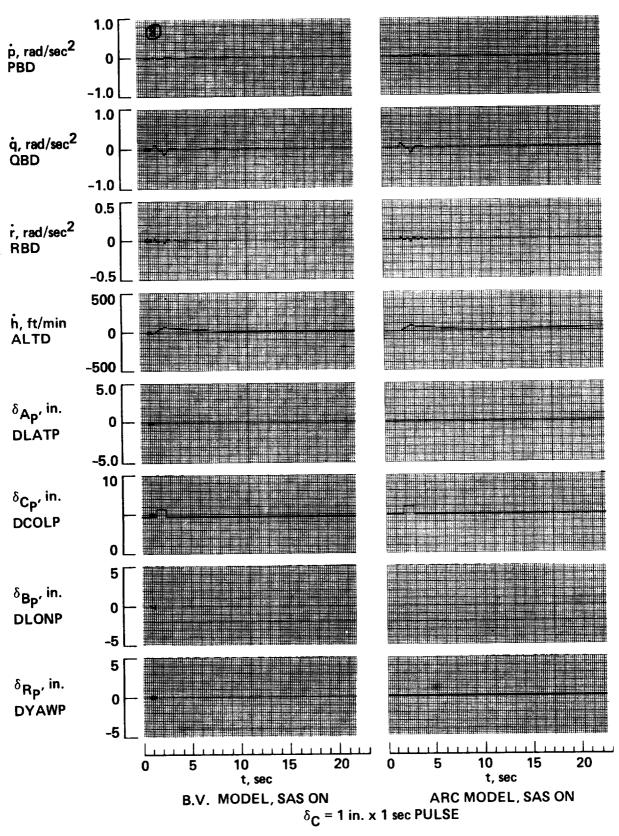


Figure 108.- BV versus ARC simulation response data, slung load attached; $V_{\rm eq}$ = 75 knots.

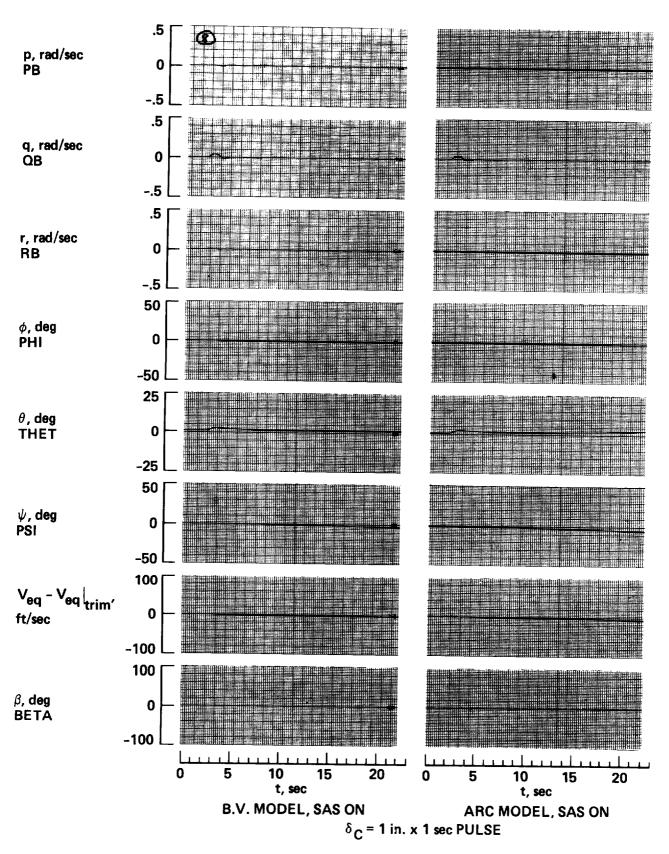


Figure 109.- BV versus ARC simulation response data, slung load attached; $V_{\rm eq}$ = 75 knots.

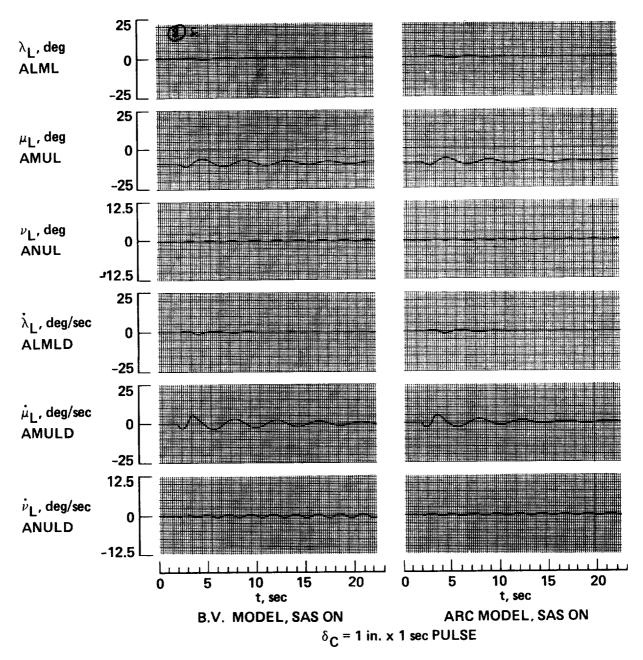


Figure 110.- BV versus ARC simulation response data, slung load attached; $V_{\rm eq}$ = 75 knots.

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15. Supplementary Notes

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16. Abstract

A nonlinear simulation model of the CH-47B helicopter, developed by the Boeing Vertol Company (ref. 1), has been adapted for use in the NASA Ames Research Center (ARC) simulation facility. The model represents the specific configuration of the ARC variable stability CH-47B helicopter (fig. 1) and will be used in ground simulation research and to expedite and verify flight experiment design.

Modeling of the helicopter uses a total force approach in six rigid body degrees of freedom. Rotor dynamics are simulated using the Wheatley-Bailey equations, including steady-state flapping dynamics. Also included in the model is the option for simulation of external suspension, slung-load equations of motion.

Validation of the model (discussed in Volume II of this report) has been accomplished using static and dynamic data from the original Boeing Vertol mathematical model and flight test data from references 2 and 3, as reproduced in reference 4. The model is appropriate for use in real-time piloted simulation and is implemented on the ARC Sigma IX computer where it may be operated with a digital cycle time of 0.03 sec.

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